LIST OF CONTRIBUTORS.

Page

Blanford, H. F. ;—*Some further results of sun-thermometer observations with reference to atmospheric absorption and the supposed variation of the solar heat* 72

Cockburn, J. ;—*On an abnormality in the horns of the Hog-deer,* axis porcinus, *with an amplification of the theory of the evolution of antlers in Ruminants* 45

——— ;—*On the habits of a little-known Lizard,* Brachysaura Ornata... 50

De Nice'ville, L. ;—*Second list of Butterflies taken in Sikkim in October* 1882, *with notes on habits, &c.* 54

——— ;—See Wood-Mason, J.

Godwin-Austen, H. H. ;—*Notes on and Drawings of the Animals of various Indian Land Mollusca* (Pulmonifera) Plate V ... 68

Möllendorf, O. F. ;—*On a collection of Japanese* Clausiliæ *made by Brigade-Surgeon R. Hungerford in* 1881 (Plate I) ... 1

——— ;—Clausilia nevilliana, *a new species from the Nicobars* 11

——— ;—*Descriptions of some new Asiatic* Clausiliæ ... 12

Marshall, G. F. L. ;—*Some new or rare species of* Rhopalocerous Lepidoptera *from the Indian region* (Plate IV) 37

——— ;—*A new species of* Hipparchia (Lepidoptera Rhophalocera) *from the N. W. Himalayas* 67

Wood-Mason, J. ;—*On new and little-known* Mantodea 21

——— and de Nice'ville, L. ;—*Second List of Diurnal* Lepidoptera *inhabiting the Nicobar Islands,* (Plate III and two wood-cuts) 14

Date of issue of the different numbers of the Journal, Part II, 1882.

No. I.—Containing pp. 1—36, with Plates I and III ; and Title-page, Index, and 3 Plates for Vol. L, was issued on August 21st, 1882.

Nos. II—III.—Containing pp. 37—66, with Plate XVI for Vol. L, was issued on December 30th, 1882.

No. IV.—Containing pp. 67—90, with Plate V, and Title-page, Index, &c., for Vol. LI, was issued on March 1st, 1883.

LIST OF PLATES.

I.—New Japanese and Indian *Clausiliæ.*
II.—Wanting.
III.—Diurnal *Lepidoptera* inhabiting the Nicobar Islands.
IV.—*Rhopalocerous Lepidoptera* from the Indian region. (This plate will be published with No. I of 1883.)
V.—Indian Land Shells.

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

◆

VOL. L.

PART II. (NATURAL HISTORY, &c.)

(NOS. I. TO IV.—1881.)

EDITED BY

THE NATURAL HISTORY SECRETARY,

> "It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia* will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease." SIR WM. JONES.

CALCUTTA:
PRINTED BY J. W. THOMAS, AT THE BAPTIST MISSION PRESS,
AND PUBLISHED BY THE
ASIATIC SOCIETY, 57, PARK STREET.
1881.

LIST OF CONTRIBUTORS.

Page

Sam, Government of ;—*List of Earthquakes recorded in Assam during the Years* 1879 *and* 1880, ... 61
Ball, V. ;—*On the Identification of certain Diamond Mines in India which were known to and worked by the Ancients, especially those which were visited by Tavernier. With a note on the History of the Koh-i-nur,* (with two Woodcuts), ... 31
———— ;—*Additional Note on the Identification of the ancient Diamond Mines visited by Tavernier,*... 219
nford, H. F. ;—*On the Relations of Cloud and Rainfall to Temperature in India, and on the opposite Variations of Density in the higher and lower Atmospheric Strata,* (Plate XV), ... 69
———— W. T. ;—*On the Voles* (Arvicolæ) *of the Himalayas, Tibet, and Afghanistan,* (Plates I & II), ... 88
———————— ;—*On* Myospalax fuscicapillus, *Blyth,* (Plate II, part), ... 118
———— ———— ;—*Notes on an apparently undescribed* Varanus *from* *serim, and on other* Reptilia *and* Amphibia, (Plate XVI), 239
———— ;—*A numerical Estimate of the Species of Animals, chiefly Land and Freshwater, hitherto recorded from British India and its Dependencies,* 263
Feistmantel, O. ;—*A Sketch of the History of the Fossils of the Indian Gondwana System,* 168
Nevill, G. ;—*New or little-known* Mollusca *of the Indo-Malayan Fauna,* (Plates V, VI, & VII), ... 125
———— ;—*Description of a new Species of* Rostellaria *from the Bay of Bengal,* 262
Nicéville, L. de ;—*A List of Butterflies taken in Sikkim in October,* 1880, *with Notes on Habits, &c,* 49
———————— ;—*See* Wood-Mason,
Peal, S. E. ;—*Report on a Visit to the Nongyang Lake, on the Burmese Frontier, February* 1879, (Plates VIII—XIII), .. 1
Theobald, W. ;—*List of* Mollusca *from the Hills between Mari* *ai,* 44
Wood- ;—*On some Lepidopterous Insects belonging to the Rhopalocerous Genera* Euripus *and* Penthema *from India and Burmah,* (Plates III & IV, part), ... 85

Page

WOOD-MASON J. ;—*Description of a new Species of the Lepidopterous Genus* Euripus *from North-Eastern India*, (Plate IV, part), 272

——— & L. DE NICE'VILLE ;—*List of Diurnal* Lepidoptera *inhabiting the Nicobar Islands*, (with a Woodcut), ... 224

——— & L. DE NICE'VILLE ;—*Second List of Rhopalocerous* Lepidoptera *from Port Blair, Andaman Islands, with Descriptions of, and Notes on, new and little-known Species and Varieties*, (Plate XIV & Plate IV, part), ... 243

Dates of Issue of different numbers of Journal, Part II, 1881.

No. I.—Containing pp. 1—67, with Plates VIII, IX, X, XI, XII, & XIII, and Title-page, Index, &c. to Vol. XLIX, was issued on April 30th, 1881.

No. II.—Containing pp. 69—123, with Plates I, II, & XV, was issued on July 30th, 1881.

No. III.—Containing pp. 125—238, with Plates V, VI, & VII, was issued on October 22nd, 1881.

No. IV.—Containing pp. 239—273, with Plate XIV, was issued on December 21st, 1881.

LIST OF PLATES.

I. } Dentition of *Arvicolae* and of *Ellobius fuscicapillus.*
II. }

III. } Butterflies from India and Burmah.
IV. }

V. } Land, Freshwater, Estuarine, and Marine Shells, mostly belonging
VI. } to the Indo-Malayan Fauna.
VII. }

VIII. }
IX. }
X. } Outline Sketches of the Nongyang Lake and surrounding scenery.
XI. }
XII. }

XIII. Map, showing proposed route from Assam to Yang-tse.

XIV. Rhopalocerous Lepidoptera from the Andamans.

XV. Elevation and Section of a Raingauge-evapometer.

XVI. *Varanus macrolepis.*

ERRATA AND ADDENDA.

Page 53, line 10, *for* “*Pupilio*” *read* “*Papilio.*”
„ 53, „ 37, }
„ 55, „ 27, } „ “*Mycaleris*” *read* “*Mycalesis.*”
„ 58, „ 20, „ “*Shibochiona*” *read* “*Stibochiona.*”
„ 94, „ 1, „ “the upper molar” *read* “the last upper molar.”
„ 95, lines 10 and 12 from bottom, *for* “the anterior lower molar” *read* “the anterior upper molar.”
„ 103, line 18 from top, *for* “are added (2) as” *read* “are added (2). As.”
„ 121, „ 21 from top, „ “received” *read* “viewed.”
„ 121, „ 5 from bottom *for* “molars” *read* “molar.”
„ 137, „ 3 from top, *after* “mil.” *insert* “and Conch.-Cab. II, Pl. 26, figs. 16-17.”
„ 137, „ 4 from top, *dele* “or Conch.-Cab. II, Pl. 26, figs. 16-17.”
„ 168, „ 3 of foot note, *for* “1886” *read* “1866.”
„ 196, „ 23, *for* “*kingianam*” *read* “*kingianum.*”
„ 209, „ 1, „ “*rhombicas*” „ “*rhombicus.*”

·055·1
·002/5

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

Part I.—HISTORY, LITERATURE, &c.

No. I.—1881.

Contributions to the History of Bundelkhand.—By VINCENT A. SMITH, B. A., B. C. S.

PART I.

THE PRAE-CHANDEL PERIOD. (To 830 A. D.)

The Gaharwárs.

The traditions current in Mahoba and the villages in the neighbourhood unanimously declare that a Gaharwár Ráj preceded at some undefined date the rule of the famous Chandel dynasty. I have carefully noted all traditions of this kind that I heard, but have not succeeded in learning much about the old Gaharwár chiefs. One fact we know for certain that they were great tank builders, and in the country round Mahoba their tanks are nearly as numerous as those ascribed to the Chandels, from which they may generally, if not always, be distinguished by the circumstance that in the Gaharwár embankments no cut stone is employed, whereas part of the Chandel embankments is generally formed of dressed granite blocks. The antiquity of the Gaharwár works is attested, not only by the rudeness of their construction, but also by the fact that in several cases the embankments are broken and the beds of the lakes or tanks dry.

The greatest of the Gaharwár works is the massive embankment of the Bíjanagar lake, a beautiful sheet of water about four miles in circumference, situated about three miles east of Mahoba.

General Cunningham (Arch. Rep. II, 439) asserts that this lake was the work of Vijaya Pála Chandel in the eleventh century, but, although it is by some attributed to Bij Brihm Chandel, the general belief is that it was constructed by the Gaharwárs, and, judging from the style of the masonry, I have no doubt that the latter opinion is correct.

The embankment was repaired by Díwán Mohan Singh, an illegitimate son of Rájá Chhatarsál, about the middle of the last century, and has since been further strengthened by the English authorities. The ruins of Mohan Singh's castle still form a conspicuous object in the view from the embankment.

The Kandaura Tál, situated in the townships of Thána and Paswára, and separated by a narrow strip of land from the Bíjanagar lake, is one of the prettiest of the Bundelkhand lakes. It was constructed, it is said by Kandaur Singh, an officer of the Gaharwár Rájá.

The following list comprises all the Gaharwár embankments, so far as I have noted them, but it is certainly very incomplete.

Pargana Mahoba.

Name of village.

1. Baraipura. A small broken tank. The old *khera* or mound here is named Máhilpur, and is said to have belonged to Máhil Parihár, the counsellor of Rájá Parmál.
2. Bhandrá. A large tank, containing water.
3. Bhaṭewar. A considerable dry tank. The village is said to have belonged to Jagnáik Bhát, a servant of Rájá Parmál, and a prominent personage in the Chand Ráesa.
4. Bíjanagar. An extensive and deep lake, which never dries up.
5. Bilkhí. A considerable lake, which never dries up.
6. Káripahári. A small dry tank.
7. Paswára. A beautiful lake, belonging partly to Paswára and partly to Thána. It is named the Kandaura Tál, and is said to have been constructed by Kandaur Singh, an officer of the Gaharwár Rájá.
8. Pawá. A considerable but shallow lake, much silted up; it is named Bapurá.

Pargana Panwárí-Jaitpur.

1. Narerí. A tank, which dries up in the hot weather. It is said to be the work of Narhar Gaharwár.
2. Nunaura *or* Nunyaura. A large tank.
3. Sela Muáf. A tank named Kantalá.

The fact that not one of the tanks above enumerated is situated more than about 15 miles from Mahoba indicates that the Gaharwár principality was restricted to the immediate neighbourhood of that town.

Many of the Chandel tanks and lakes are associated with temples, but, so far as I remember, the Gaharwár tanks never are.

All legend connects the Gaharwár clan with Kásí (Benares), but how or when the Gaharwárs obtained possession of Mahoba we know not.

Possibly their movement may have been connected with the commotions which ensued on the death of Harsha Varddhana, the great king of Kanauj, in the middle of the seventh century.

A Gorakhpur tradition affirms that the Gaharwárs are descended from the famous Rájá Nala and came to Kásí from Narwar near Gwáliár;* and, if there be any truth in this story, the Gaharwárs may have taken Mahoba on their way from Narwar to Benares.

There seems to be some reason to believe that the Gaharwár rulers of Bundelkhand were connected with the Gaharwár dynasty of Kanauj, but I am not at present in a position to discuss the point.

The Parihárs.

The traditions preserved by the Kánungo's family of Mahoba declare that the Gaharwár dynasty was succeeded by the rule of Parihárs, who were overthrown in 677 Samvat by Chandra Varmma the first of the Chandel chiefs.

The fact that Mahoba and a large part of Bundelkhand was once subject to Parihár rulers does not rest on the authority of Mahoba traditions alone. I shall now state all the evidence on the point which appears to be at present accessible.

The little principality of Nagod or Uchahara, situated on the high road between Allahabad and Jabalpur about 100 miles from Mahoba in a south-easterly direction, is still governed by a Parihár chief. General Cunningham in his last volume gives the following account of the traditions of this family:

"The original name of the district is said to have been Barmé, and the Barmé Nadí is noted as being the present boundary between the Mahiyar and Uchahara chiefships. But this stream was at first only the boundary line which divided the two districts of north and south Barmé. At Kári Tálai, which once formed part of Mahiyar, I found an inscription with the name of Uchahaḍa. The old name of Barmé is widely known; but few people seemed to know anything about the extent of the country. From the late minister of the Uchahara state, I learned that the Parihár chiefship was older than that of the Chandels of Mahoba, as well as that of the Baghels of Rewa. According to his belief, it formerly included Mahoba and all the country to the north as far as the Gháts and Bílhari on the south, and extended to Mau Mahewa on the west, and on the east comprised most of the country now held by the Bághels. I do not suppose that the Bághels would admit this eastern extension; but it seems to receive some support from the position assigned by Ptolemy to the *Poruári*, who are very probably the same people as the Parihárs. The great lake at Bilhari, called Lakshman Ságar, is said to have been made by Lakshman Sen Parihár; and the great fort of Singorgaṛh, still further to the south, contains a pillar bearing the name of a Parihár Rájá. The family has no ancient records, and vaguely claims to have come from Abú-Sikhar in the west (Mount Abú) more than thirty generations ago.

---

* Martin's Eastern India, II, 458 quoted in Beames' Elliot, I, 121 note.

"In Uchahara itself there is no ancient building now standing; but there are numerous fragments of architecture and sculpture which probably date as high as 700 or 800 A. D. This is perhaps the earliest date that can be assigned to the Parihárs in Uchahara, as everybody affirms that they were preceded by a Teliya Ráj, or dynasty of Telís, who resided at *Kho*, over the whole of the country called Barmé."*

This Uchahara tradition is, it will be observed, quite in agreement with the Mahoba tradition, so far as the latter goes.

The town of Panwárí, situated a few miles from the Dasán River, and about 27 miles W. N. W. of Mahoba, is supposed to have been founded by Rájá Panḍ, a Parihár Thákur in 960 Samvat = 903 A. D. A fort called Pandí used to exist near where the bazár now stands. The Panwárí people also affirm that the Parihár rule preceded the Chandel, and that the Parihár dominions extended from the Jamna to the Narbada. This tradition is supported by the fact that the old name of Panwárí was Parhárpur.†

Part of the town of Mahoba is still remembered as the Parihárs' quarter, but Thákurs of any clan do not, with one or two exceptions, now reside in Mahoba, which is believed to have become an unlucky place for both Thákurs and Lodhís since the overthrow of the Chandels.

The earliest inhabitants of 'Arí in Jaitpur are said to have been Parihárs, who constructed a small tank called Nadiyá, which has an appearance of great antiquity.

An early Parihár occupation is also mentioned in the traditions of a few other villages.

The Mahoba Kánungos name 677 Samvat as the date of the substitution of the Chandel Chandra Varmma for the Parihár ruler. Of course it is now well known that the real founder of the Chandel dynasty was not Chandra Varmma but Nánika. The date, however, can hardly be quite imaginary. General Cunningham and Col. Ellis were on different occasions given the following dates for the accession of the Chandels to power—204, 225, 661, and 682. As it is well established that the Chandel dynasty attained power in or about 800 A. D. (probably a little later, say in 830 A. D.), it is clear that these dates do not refer to the Vikrama Samvat.* General Cunningham proposes, and I think rightly, to refer the smaller numbers, *i. e.*, the dates 204 and 225 to the era of Srí Harsha of Kanauj, which began in 607 A. D., and thus to make them equivalent to 810 and 831 A. D. respectively, a conclusion which is in complete accordance with the Chandel inscriptions.

---

* Arch. Report, IX, pp. 5 and 6. At p. 35, General Cunningham distinguishes Lakshman Sen from Lakshman Singh, and says that the latter was the builder of the Bilahrí tank.

† Beames' Elliot, II. 97.

But, when he attempts to interpret the dates 661 and 682 by referring them to the Ṣáka era, thus making them equivalent to A. D. 739 and 760 respectively, he is not so happy, for those dates are much too early.

It is curious that the difference between 204 and 225, the extreme dates of one set, and 661 and 682, the extreme dates of the other set, is the same, *viz.*, 21 years.

This circumstance may be accidental, but perhaps it may not be too fanciful to conjecture that the traditions have preserved in two forms the dates of two events which were separated by an interval of 21 years, but have confounded the events.

It is hard to determine the era to which the higher numbers, if they are not purely imaginary, should be referred.

The recently discovered Kulachuri era of the kingdom of Chedi,† which kingdom at one time included Mahoba, naturally occurs to the mind, but that era would give A. D. 910, 926, and 931 respectively as the equivalents of 661, 677 and 682; and the first and last of the dates so obtained are exactly a century later than the dates resulting from the application of the Srí Harsha era to the other set of traditional dates.

Still, in spite of this difficulty, I am disposed to believe that the Chedi era supplies the right key, and I conjecture that there is a mistake of a century in the tradition, and that the larger numbers should be read as 561, 577 and 582.

Such an interpretation of a tradition may appear to the reader unreasonably fanciful, but I justify it by showing that similar mistakes do occur in traditions. I have heard the date of the capture of Mahoba by Rájá Prithiráj stated as S. 1140, the correct date being S. 1240, or more accurately S. 1239; and my notes give the traditional date for the foundation of Murhárí near Jaitpur as "S. 641 *or* S. 741."

What is probably an instance of a similar error will be noticed in the discussion on the reign of Madana Varmma Chandel in the second part of this essay.

---

* The known Chandel inscriptions are all beyond doubt dated in the Vikrama Samvat.

† See Arch. Rep. IX. 111 and 112.

I conclude therefore that the date A. D. 831, which best accords with the evidence of the inscriptions, is the correct date for the overthrow of the Paribár chief of Mahoba by Nánika Chandel.

Perhaps some important stage in the contest between the rival chieftains marked the year 810, twenty-one years before the final victory.

The existence to this day of the little Parihár State of Uchahara shows that the Chandel success involved no extermination of the vanquished. The Uchahara chief probably throughout retained his local jurisdiction, in subordination at one time to the Chandels, and at another to the Haihayas or Kulachuris of Chedi, just as he now retains it in subordination to the British Crown.

In the same way we need find no difficulty in believing that Panwári was occupied by a Parihár Rájá in 903 A. D., in which year the Rájá of Mahoba was one of the early Chandels, most probably Ráhila Varmma.

The Lakshman Ságar at Bilahrí midway between Jabalpur and Uchahara is attributed to Lakshman Singh (? Sen) Parihár, who is said to have reigned 900 years ago. If this be true, he was probably a vassal of the king of Chedi, for Bilahrí does not appear to have been generally within the limits of the Chandel dominions, although, as will be shown, it was probably held by Madana Varmma in A. D. 1164.

I therefore accept the tradition as probably true which affirms that the Parihár kingdom extended over most of Bundelkhand, and I believe that its extent was larger about 800 A. D. than at any other time. The Chandels, in or about 831 A. D., ousted the Parihárs from the government of Mahoba and also probably from that of Kálinjar and Khajuráho, the Parihárs retaining their grasp on Uchahara and the surrounding country.

I was informed by the Bundela zemindárs of Kheoraha-Jeoraha in Pargana Mahoba that the capital of the Parihár kingdom was Mau-Sahania between Nayagaon (Nowgong) and Chhatarpur.

According to the local tradition,* Mauza Murhárí, close to Jaitpur, was founded in 1137 Samvat = 1080 A. D. by Rájá Udaikaran Parihár, who is said to have belonged to the same clan as Máhil, the adviser of Rájá Parmál Chandel. The tradition adds, that this Rájá was defeated in battle by the king of Dehli. The remains of his fort are still to be seen. Whether he was connected or not with the old Parihár dynasty I cannot say.

The Parihárs, who, at later dates, entered Bundelkhand, seem to have had no connection with the early rulers of the country, but their traditions are perhaps worth noting.

The Parihárs, who settled in 25 villages along the Dasán river, arrived in the year 1303 Samvat = 1246 A. D. from Gwáliar. There can be little doubt that this migration was consequent on the capture of Gwáliar and the destruction of the Parihár Ráj there by Altamish (Iltitmish) in 1232 A. D.

---

* That is to say, as I heard it myself. The other traditional dates 641 and 741 given above were obtained by a native agent.

The Parihárs of the Dasán assert that Rájá Rám the leader of the immigrants in 1246 A. D. founded seven forts at the following places :—

(1) Rámgaṛh, in Pargana Ráth, among the ravines of the Dasán, now deserted ; (2) Panwárí ; (3) Ráth, on the site known as the Old Fort, where the Tahsíl now stands ; (4) Kálpí ; (5) Magrauṭ in the N. W. corner of Pargana Ráth ; (6) Chandauṭ or Chanoṭ, in Pargana Jalálpur, where the Ráth and Kálpí road crosses the Betwa ; and (7) at Banda, the Old Fort.

This tradition seems to confuse the memory of the Prae-Chandel kingdom of the Parihárs with that of the movements of the Parihár clan resulting from the Musalmán successes.

Mauza Baura near Jaitpur was occupied by Parihárs from Salárpur in 1404 Samvat or 1347 A. D., which year fell in the reign of Muhammad Tughlak.

PART II.

THE CHANDEL PERIOD.

831-1182 A. D.

The general outline of the Chandel genealogy and chronology was satisfactorily settled by General Cunningham in his Report for 1864-1865, but some details still admit of discussion, and later discoveries require the modification of some of the conclusions then arrived at by General Cunningham.

In the following pages I shall endeavour to exhibit concisely all that is now known respecting the reign of each of the Chandel princes, and shall at the same time discuss the doubtful points in the chronology and genealogy of the dynasty, entering into a more complete collation of the published and translated inscriptions than has yet been attempted.

(I.) *Nánika.* (*Probable date* 831-850 *A. D.*)

This prince is mentioned as the founder of the dynasty in the long Lálájí (or Visvanáth) and Chaturbhuj inscriptions of Dhanga at Khajuráho, and in the imperfect Mahoba inscription dated S. 1240.*

---

* Proc., A. S. B., for 1879, page 143.

We know nothing of the events of his reign, but it may be assumed that he was the leader who wrested Mahoba from the Parihárs.

(II.) *Vákpati.* (*Probable date* 850-870.)

Mentioned only in the Lálájí and Chaturbhuj inscriptions.

Nothing positive is known of his reign, but it should be noted that Bhoja king of Kanauj held the fort of Chanderí in 862 A. D.,* and that that position was consequently not in possession of Vákpatí.

(III.) *Vijaya.* (*Probable date* 870-890.)

Mentioned only in the same inscriptions as Vákpati, and nothing definite is known about him; he is called a "great conqueror" in the Lálájí inscription.

(IV.) *Ráhila.* (*Probable date* 890-910.)

Ráhila, like Vijaya and Vákpati, is mentioned in the Lálájí and Chaturbhuj inscriptions only, among the longer extant documents, but his name is found graven on several of the stones of one of the temples at Ajaigaṛh, and he is the reputed builder of some of the tanks and temples at that fortress.†

We may therefore infer that in his time the Chandel dominions included Ajaigaṛh, and there can be little doubt that from the first they included the neighbouring stronghold of Kálinjar, which is associated by tradition with the beginnings of Chandel greatness.

Up to the time of Parmál's defeat in 1182 A. D. the Chandel kingdom seems to have always included Mahoba,. Kálinjar and Khajuráho. It cannot be far from the truth to assert that Kálinjar, with its celebrated fortress, was the military capital; Khajuráho, with its multitude of temples, the religious, and Mahoba, with the Rájá's residence, the civil capital of the Chandel State.

In the inscriptions, so far as I am aware, the Rájás always take the title of "lord of Kálinjar."

Chand describes Ráhila as a great conqueror, whose victorious arms penetrated to Ceylon, but this is of course an absurd exaggeration.

The poet also ascribes to him the foundation of Rasan in Pargana Badausa, distant about 20 miles N. E. from Kálinjar, and on this point the poet may be right, for Rasan is undoubtedly ancient. As the place has not been described at length, I may take this opportunity of inserting some notes about the antiquities there, kindly communicated to me by Mr. A. Cadell, who writes: "It had evidently been at one time a place of importance. The hill was fortified, and on the top there is a Chandel temple, of the usual shape, very plain, with no figures carved on the stone as at Gulrámpur.[*] The temple and colonnade are very little injured, but the only inscriptions are on stones at the entrance, and are no doubt of later date. To the east of the temple is a *baiṭhak* built of unusually large stones, roughly but well fitted; the surface of many of the stones is about three feet square.

---

* Arch. Report, IX. p. 102.

† *Ibid.* VII, 41.

"Oldest Rasan was on the slope of the hill; there are still remains of houses, and towards the plain there is a gateway made of stone taken from old buildings."

These notes, I think, indicate that the buildings at Rasan are older than the highly decorated edifices at Khajuráho of the 10th and 11th centuries, and so far confirm the statement that the city was founded by Ráhila.

The Ráhilya Ságar and the fine, but much injured, cruciform granite temple on its embankment near Mahoba are undoubtedly the work of Ráhila, and their existence proves that he held Mahoba as well as Ajaigaṛh and Kálinjar.

Kokalla I the Kulachuri king of Chedi (*i. e.*, the country round Jabalpur) married a Chandel princess named Nandá Deví,[†] who was probably the daughter either of Ráhila or of his predecessor Vijaya.

I may take this opportunity of noting that the dynasty generally known as Chandel (Chandella) is in some inscriptions, *e. g.*, the Láláji inscription at Khajuráho, called Chandrátreya, a name which might also be applied to the Kulachuri kings, for they too pretended to trace their descent back to the moon through the mythical Atri.[‡]

(V.) *Harsha.* (*Probable date* 910-930.)

This prince is mentioned in the Láláji, Chaturbhuj and Nunaura No. II inscriptions.

The Láláji inscription informs us that he was a great conqueror, and that he married Kankutá of the race of Gangá, but we know nothing more.

(VI.) *Yaso Varmma.* (*Probable date* 930-950.)

This prince was the son of Harsha, and is mentioned in the same inscriptions.

His consort was Narmá Deví.

---

[*] Gulrámpur also is in Pargana Badausa. The antiquities there have not been described.

[†] Arch. Raport, IX, 83.

[‡] *Ibid.* p. 101.

General Cunningham informs me that he possesses "inscriptions of Yaśo Varmma's grandchildren," but nothing has been published concerning these documents.

(VII.) *Dhanga.* (*Date circa* 950-999.)

The earliest dated inscriptions of the Chandel dynasty, as yet discovered, belong to the reign of Dhanga.*

Three undoubted dated inscriptions of this prince are known, *viz.*,—

(1.) The Chaturbhuj inscription at Khajuráho, dated S. 1011 = 954 A. D.

(2.) The Nunaura No. II inscription, dated S. 1055 = 998 A. D.

(3.) The Lálájí inscription at Khajuráho, dated S. 1056 = 999 A. D. which records Dhanga's death in that year.

The short inscription, dated S. 1011, on the doorpost of the Jinanáth temple at Khajuráho appears to contain Dhanga's name, but the reading is doubtful.

An inscription, now apparently lost, which General Cunningham found at Mahoba, gave the Chandel genealogy from Dhanga to Kírtti Varmma, that is, I presume, to Kírtti Varmma I.

The Mau-Chhatarpur inscription without date may have contained Dhanga's name at the beginning where the stone is imperfect, and his name is expressly mentioned in verse 21, which tells us that his minister was named Prabhása.

In 999 A. D., according to the Lálájí inscription, his minister was Yasondhara.

The Rájá of Kálinjar, who, in common with the Rájás of Dehli, Ajmír and Kanauj, assisted Rájá Jaipál of Lahore in his unsuccessful invasion of Ghazní, and at the battle of Lamghán in the Pesháwar valley in 978 A. D., must necessarily have been Dhanga.

The beginning of the Mau-Chhatarpur inscription states that the king eulogized, "having overcome the king of Kányakubja (Kanauj), chief "amongst all in battle, obtained sovereignty"; but here the name is lost, and it is uncertain whether the reference is to Dhanga, or to his successor Ganḍa, who certainly did conquer Kanauj.

The Lálájí inscription asserts that Dhanga kept prisoners the consorts of the Rájás of Káśí (Benares), Andhra (Telingána ?) Anga (West Bengal) and Rádha (?), and that he had in attendance the kings of Kosala (North Audh ?), Kuntala (Ballarí ?), Kratha (Berar ?), and Sinhala (Ceylon).

These boasts are plainly exaggerations, but it is evident that Dhanga was the most powerful of the early Chandel kings.

---

* For list of Chandel inscriptions with full references *vide post.*

In all probability the existing Lálájí temple at Khajuráho was the shrine of the great "emerald lingam" referred to in the inscription.

The erection of this costly and elaborate temple is another proof of Dhanga's wealth and power.

Dhanga cannot have been a sectarian bigot, for his Chaturbhuj inscription is Vaishnava, and his Lálájí inscription is Saiva.

This prince died at the sacred confluence of the Ganges and Jumna at Prayág (Allahabád) aged "upwards of one hundred autumns" in the year 999 A. D.

Dr. Rájendralál Mitra has pointed out that the common interpretation of the passage in the Lálájí inscription describing Dhanga's death, which assumes that he committed suicide, is incorrect, and that "the ordinary civil way of announcing a death is to say, so-and-so has surrendered his life to the holy river so-and-so, or the sacred pool (*kshetra*) so-and-so, and the inscription has probably adopted the same mode of expression."*

It is to be observed that the grant recorded in the Nunaura No. II inscription was made at Kási by Dhanga in the autumn of 999 A. D., but it is of course possible that he may merely have gone there on a pilgrimage, and that Benares was never included in his dominions.

The inscriptions show that Dhanga must have succeeded his father Yaso Varmma in or about the year 950 A. D.

(VIII.) *Ganḍa.* (*Date* 999 *A. D. to circa* 1025.)

This prince is not mentioned in any extant inscription except the Mau-Chhatarpur one, but must have been named in the missing Mahoba inscription before referred to.

If he was Dhanga's son he must have been well advanced in years on his succession in 999.

Ganḍa must have been the Rájá of Kálinjar who assisted Rájá Jaipál of Lahore against Mahmúd of Ghazní in 1008 A. D. and he must likewise be identified with the Nanda Rai, Rájá of Kálinjar, who according to Farishta, conquered Kanauj and killed its ruler in 1021 A. D. and who was, in punishment for his audacity, attacked by Mahmúd, to whom he surrendered Kálinjar with 14 other forts in 1023 A. D.

It is unfortunate that the names of these forts have not been preserved, for the extent of the Chandel dominions at any given time is very imperfectly known.

The dates given above limit closely the possible duration of Ganḍa's reign, for we know that it began in 999 A. D. and that two reigns intervened between its close and the accession of Deva Varmma Deva (*alias* Kírtti Varmma I) who was reigning in 1050 A. D.

---

* J. A. S. Bengal Vol. XLVII, Part I, page 74.

The fact that an inscription dated S. 1058 = 1011 A. D. containing the name of Rájá Kokalla, is in the Lálájí temple at Khajuráho, has suggested the conjecture that Kokalla II of Chedi may have attacked the Chandel dominions early in Gaṇḍa's reign,* but this inscription has not been published nor translated, and there is no other evidence of such an attack.

It is, however, certain that at one time, which must have been prior to the reign of Kírtti Varmma (1049-1100) the conqueror of Chedi, the kings of Chedi did exercise authority over Kálinjar, for in their inscriptions some of them assume the title of "lord of Kálanjjarapura."†

The Mau-Chhatarpur inscription informs us that Dhanga's minister Prabhása continued to serve under Gaṇḍa.

(IX.) *Vidhyádhara Deva.* (*Probable date* 1025-1035)

This prince is mentioned only in the Mau-Chhatarpur and Nunaura No. I, inscriptions, and, except that there is no doubt as to his place in the genealogy, and that we are told that his minister was named Sivanáma, we know nothing positive of his reign.

He was contemporary with Gángaya Deva king of Dáhal or Chedi, who in 1030-31 A. D., as we learn from Abú Rihán, had his capital at Tripuri near Jabalpur.‡

It is to be observed that the geographer includes both Gwáliar and Kálinjar in the country of Jajhoti, which was distinct from the country of Dáhal. At that time Gwáliar was under the immediate rule of local Kachhwáha chieftains, but it is possible that they may have acknowledged the suzerainty of the greater Chandel kings.

(X.) *Vijaya Pála Deva.* (*Probable date* 1035-1049.)

This Rájá is mentioned in the same inscriptions as his predecessor is. His minister was Mahípála, and we learn from the Nunaura No. I inscription, that he had a queen named Bhuvana Deví, who was the mother of his successor, who is in that inscription named Deva Varmma Deva; but with these two facts our information ceases.

(XI.) *Kírtti Varmma Deva I,* alias *Deva Varmma Deva,* alias *Bhúmipála.* (*Probable date* 1049-1100.)

With this prince the difficulty in reconciling the inscriptions begins.

The Mau-Chhatarpur inscription declares (verse 7) that the successor of Vijapapála was Kírtti Varmma Deva "famed unto the sea-shore," and informs us that his minister was Ananta, who is praised at length.

---

* Arch. Report IX. 86.

† *Ibid.* 77.

‡ *Ibid.* 106.

The Nunaura No. I inscription states that Vijaya Pála was succeeded by his son "the devout follower of Mahesvara, the lord of Kálinjar, Srí Deva Varmma Deva," to whom the usual praise is given.

Maisey's No. II, Nílkanth inscription from Kálinjar has the following words in verse 7, (the preceding lines being illegible) "Was born Bijayapála, from him sprang Bhúmipála, who with his sharp sword destroyed many kings."

It is therefore evident that Kírtti Varmma I, Deva Varmma Deva, and Bhúmipála, who are all recorded as having succeeded Vijaya Pála, were one and the same person.

It is difficult to fix the length of the reign of this many-named prince; for, as will presently be demonstrated, there was a second Kírtti Varmma, who may possibly be the Kírat Brahm of traditional fame.

One date in the reign under discussion is certain, namely, that of the Nunaura No. I inscription, S. 1107 = 1050-1 A. D., and this date must be very near the beginning of the reign, for Gaṇḍa Deva was alive in 1023 A. D., and two reigns intervene between Gaṇḍa and Deva Varmma *alias* Kírtti Varmma. We may therefore assume that the reign of the latter began in 1149 A. D., a date which must be very nearly quite correct.

I believe his reign to have been, like that of Dhanga, exceptionally long; for, after careful consideration of all the available evidence, I have come to the conclusion that Kírtti Varmma I, and not Kírtti Varmma II, is the prince mentioned in the prologue to the Prabodha Chandrodaya as the conqueror of Chedi, and further that he is the Kírát Brahm of tradition, and that the unpublished inscription cut on the rock at Deogarh in 1097 A. D. is his work.*

The defeat of Karna king of Chedi by Kírtti Varmma Chandel is attested by two independent documents, the prologue to the Prabodha Chandrodaya, and Maisey's No. II Kálinjar inscription.

Karna of Chedi was reigning (as the Benares copper-plate inscription shows) in 793 of the Chedi Samvat, equivalent to 1042 A. D.† and his reign seems to have extended till about 1075 A. D., or perhaps a few years later.

The prologue to the Prabodha Chandrodaya distinctly ascribes the subjection of Karna to Kírtti Varmma, but Maisey's No. II inscription ascribes the defeat of "the immense army of Karna" not, as might be expected to Bhúmipála, the *alias* of Kírtti Varmma, but to Bhúmipála's son, whose name is missing from the inscription.

The words are contained in verse 8, which follows verse 7 already quoted, apparently without any break. His (*scil.* Bhúmipála's) "son

---

* Arch. Report, IX, 108.

† *Ibid.* p. 82.

"made low the kings, as Agastya made low the mountain (*i. e.*, the Vin-"dhya mountains). Having conquered the southern country, speedily "defeated the immense army of Karna [a break] *verse* 9. * * which was "watered by the flood of tears of the gazelle-eyed females of Málwa [a break] * * *verse* 10. His son Jaya Varmma Deva etc."

From the Mau-Chhatarpur inscription we infer, with I think certainty, that the name of the son of Bhúmipála, *alias* Kírtti Varmma I, and the father of Kírtti Varmma II, *alias* Jayapála, was Sallakshana. I conclude therefore that the actual conqueror of Chedi was Sallakshana, while heir-apparent and acting under the orders of his father Kírtti Varmma I.

The Kálinjar inscription just quoted shows clearly that Kírtti Varmma II, *alias* Jaya Varmma, cannot have been the conqueror of Chedi, for that prince was the grandson of Bhúmipála.

The fort of Deogaṛh, now in the Lalitpur district, lies so far to the south-west towards Málwa, that it probably was in general held by the kings of Chedi. I infer in consequence that the inscription of Kírtti at Deogaṛh, dated 1097 A. D., is the work of Kírtti Varmma I, the conqueror of Chedi, to whom also should be ascribed the formation of the lake known as the Kírat Ságar near the fort of Chanderi, which is only a few miles distant from Deogaṛh.

The embankment of the lake bearing the same name at Mahoba is also probably the work of the same king.

"The people are unanimous" in referring the foundation of the town of Old Chanderí, 9 miles from the fort and more modern town, to the Chandels of Mahoba. General Cunningham was (though for no convincing reason) inclined to throw doubt on this tradition,* but I see no reason why it should be discredited, confirmed as it is by the names of the town and of the Kírat Ságar, and by the existence of the inscription at Deogaṛh.

For the reasons given above I am convinced that Kírtti Varmma I, under whose orders the conquest of Chedi was effected, is the Kírat Brahm of Bundelkhand tradition.

He is credited with having repaired the fortifications of Kálinjar, and with having constructed some of the buildings at Ajaigaṛh.†

To this king also should be assigned the coins bearing the name of Kírtti Varmma, because coins are known of his grandson Kírtti Varmma II, *alias* Jaya Varmma, stamped with the name of Jaya Varmma.

No coin of any kind is known to exist which can be assigned to any of the predecessors of Kírtti Varmma I, who appears to have been the first of the Chandels who coined money.

The coins of him and his successors are extremely rare, and are imitations of the coinage of the Kulachuri kings of Chedi, which appears to have been first issued by Rájá Gángaya Deva, who was reigning in 1030-1 A. D.*

---

* Arch. Report, II, 402 and 405.

† *Ibid.* VII, 47.

It seems evident that Kírtti Varmma after his conquest of Chedi adopted the system of coinage there practised.

With reference to the date of the Deogaṛh inscription and of Karna Kulachuri's reign I would provisionally date the conquest of Chedi and the first issue of Chandel coins in 1070 to 1080 A. D., some twenty years or more before the close of the reign of Kírtti Varmma I.

It is possible that the fort of Deogaṛh may have been built or rebuilt by this king, and called after him under his name of Deva Varmma Deva.

(XII.) *Sallakshana Varmma Deva.* (*Probable date* 1100-1110.)

Unluckily, both in the Mau-Chhatarpur inscription and in Maisey's No II, there is a lacuna in the genealogy where the name of the successor of Kírtti Varmma I, *alias* Bhúmipála, should come in; but, as General Cunningham has satisfactorily shown by an examination of the later verses of the Mau-Chhatarpur inscription, the missing name must have been Sallakshana.

I may add as further proof the argument that coins of Sallakshana (Hallakshana) are extant, and that verse 37 of the Mau-Chhatarpur inscription speaks of Sallakshana as "the sovereign ruler," and, that the rest of the Chandel genealogy being known with certainty, there is no other gap but this to be filled up by the name of a Rájá Sallakshana exercising the regal privilege of coining money.

The Mau-Chhatarpur inscription, which is here much injured, appears to state that Vatsu, Vámana and Pradyumna, sons of Kírtti Varmma's minister Ananta, all served under Sallakshana.

The reign of Sallakshana was certainly short, for his predecessor was reigning in 1097 A. D. and his successor in 1116 A. D.

(XIII.) *Jaya Varmma Deva* alias *Kírtti Varmma II.*

(*Probable date* 1110-1120.)

This prince is mentioned under the name of Jaya Varmma in the Láláji inscription, the supplement to which was inscribed in his reign, in the year 1173 = 1116 A. D.

---

* Arch. Report, IX, 106 and II, 458. In 1871 only 36 specimens of the Chandel coinage were known to have been ever discovered, and of these 13 had been lost in the mutiny. I have not heard of any being found of late years. Of the 23 remaining, I possess two, for which I am indebted to the generosity of General Cunningham. In the course of six years residence in Bundelkhand I have not succeeded in discovering a single specimen.

A few coins too are known bearing the name of Jaya Varmma Deva.

In the Mau-Chhatarpur inscription he is described under the same name as the son of [Sallakshana] Varmma, and is praised in the usual fashion.

This inscription further informs us that his younger uterine brother was named Sallakshana Varmma. The words are " (*verse* 11) Jaya Varmma Deva etc., (*verse* 12). The fortunate Sallakshana Varmma was the uterine and younger brother of this lord of the earth ; afterwards the prince Prithví Varmma, equal to the task, sustained the burden of the hereditary government."

Verse 13 praises Prithví Varmma for his piety, and verse 14 tells us that "from him was born Madana Varmma, the protector of the earth," whose praises are then detailed.

The inscription seems to have been erected in the reign of Madana Varmma.

The above words indicate that Sallakshana Varmma the younger was not a ruling prince ; and indeed he cannot have been, for there is no room for two Sallakshanas in the roll of sovereigns. The younger Sallakshana is mentioned very much in the same way as Pratápa Varmma, the younger brother of Madana Varmma Deva, is mentioned in Maisey's No. II inscription.

That document in verse 10 describes Jaya Varmma as " devoted to the worship of Náráyana," and in verse 11 it is recorded that " being wearied " of government, the king made it over to * * * Varmma and proceeded " to wash away his sins in the divine river * * (*verse* 12). They departed " their lives, and obtained all their desires in the next world (*verse* 13). " After him Madana Varmma etc."

In the Augási copper-plate, dated S. 1190 = 1133 A. D., the order of succession is given as Kírtti Varmma, Prithví Varmma, Madana Varmma. As both this document and the Mau-Chhatarpur inscription agree in interposing only the name of Prithví Varmma between Madana Varmma and in the one case Jaya Varmma, and in the other case Kírtti Varmma, it necessarily follows that the name missing in Maisey's No. II, is that of Prithví Varmma, and that Jaya Varmma and Kírtti Varmma II were one and the same person, the grandson of Kírtti Varmma I.*

This argument shows that Dr. Rájendralála Mitra cannot be right in identifying the Kírtti Varmma of the Augásí plate with Sallakshana.

Jaya Varmma's and Prithví Varmma's reigns must both have been short, because Kírtti Varmma I was reigning in 1097, and Madana Varmma in 1131 A. D.

---

* " The numerous instances in which the grandson takes his grandfather's name, " and which is an interminable source of confusion in Indian chronological enquiries." Fergusson's Indian Architecture, p. 715.

(XIV.) *Prithví Varmma Deva.* (*Probable date* 1120-1130.)

The inscriptions which mention this Rájá have already been discussed. A few coins of his are extant, but we know nothing definite about him, except that he was the father of Madana Varmma Deva, and that he is praised for his piety in the Mau-Chhatarpur inscription. The passage in that document relating to his ministers scarcely yields sense.

(XV.) *Madana Varmma Deva.* (*Probable date* 1130-1165.)

The dated inscriptions of this prince are unusually numerous, and when considered along with those of his successor, fix the limits of his reign very closely.

They are as follows :—

1. Maisey's No. IV, from Kálinjar, S. 1188 = A. D. 1131.
2. Augási copper plate S. 1190 = A. D. 1133.
3. Neminâth statue at Mahoba S. 1211 = „ 1154.
4. Sambhunáth „ „ Khajuráho S. 1215 = „ 1158.
5. Sumatináth „ „ Mahoba S. „ = „ „
6. Ajitanáth „ „ „ S. 1220 = „ 1163.

The earliest inscription of his successor Paramárdi Deva is dated 1167 A. D.

Madana Varmma's name is preserved in the designation of the Madan Ságar lake at Mahoba, and in that of a small mound of ruins at Máhilpur or Máhinpur about three miles east of the town, and known as Madan Khera.

The bardic lists all insert Kírtti Varmma between Madana Varmma and Paramárdi Deva, but these lists are worthless as evidence of the order of succession, and we have already seen that there were really two Kírtti Varmmas, at an earlier date.

In the Dahi copper-plate, which will be discussed in Part III, of this essay, the name of Paramárdi's predecessor was read from an imperfect copy as Yádava, an obvious mistake for Madana.

A few gold and copper coins of Madana Varmma Deva are extant.

The numerous Jain images bearing dates, which fall within the limits of Madana Varmma's reign, and four of which are expressly stated to have been set up in his time, prove that under his rule the Jain religion flourished.

In the Augási copper-plate Madana Varmma calls himself the devout worshipper of Ṣiva, but whatever his own belief may have been, it is evident that he freely tolerated a rival creed.

The poet Chand and the inscriptions concur in testifying that Madana Varmma was a great and successful warrior who widely extended the rule of his house.

If the words of verse 14 of the Kálinjar No II inscription are to be literally taken, Madana Varmma pushed his victories as far west as Guzerat, and Chand confirms the statement, but it is perhaps safer to believe that the conquest of Chedi which Madana Varmma really effected may have been exaggerated. The words of the Kálinjar inscription are "He in an instant defeated the king of Gurjjara, as Krishna in former times defeated Kanṣa. He undertook an expedition to conquer the world. * * *"

The undated Mau-Chhatarpur inscription records the conquest of Chedi by Madana Varmma.

It will be remembered that Kírtti Varmma I had conquered Chedi in the reign of Karna Kulachuri, prior apparently to the year 1097 A. D. The Kulachuri power must have recovered in the early part of the twelfth century to render necessary the second conquest by Madana Varmma.

The latest known inscription of the Kulachuris of Chedi is one of Vijaya Deva dated in 932 of the Chedi era = 1181 A. D. General Cunningham (Arch. Rep. IX, 113) conjectures that the Chedi dynasty was overthrown by the growing power of the Baghels of Rewá, but produces no evidence in support of his conjecture.

It seems to be more reasonable to suppose that the decline of the Kulachuri dynasty of Chedi was due rather to the effects of the victories of the neighbouring Chandel king than to the rise of the Baghel power to the east of the Chandel territory. The existence of a Kulachuri inscription, dated 1181 A. D., shows that the dynasty, though weakened, survived the Chandel attack.

With reference to the conquest of Chedi by Madana Varmma a passage in Colonel Sleeman's writings is interesting. He writes about Singolgaṛh, "This fortress is of immense extent, and was built by Rájá Belo, a prince of the Chundele Rájpút tribe, who reigned over that country before it was added to the Gurha Mundala dominions," and in a note he adds: "The Mahoba family were Chundele Rájpúts, and their dominion had extended over Singolegurh, as above stated, and also over Belehrí, or the district of Kanoja in which it is comprised. The capital of Belehrí was Kondulpore, three miles west from the town of Belehrí. There is a stone inscribed by Rájá Mulun Deo on the dedication of a temple at Kondulpore dated Samvat 815, A. D. 758. He was one of the Chundele Rájás."

General Cunningham in his account of Bilharí and the surrounding country makes no mention even of the existence of such a place as Kondalpur, nor does he seem to have looked for the inscription said by Col. Sleeman to exist there.

He throws doubt on the facts recorded on the authority of tradition by Col. Sleeman in the following remarks: "According to Sir William Sleeman, the fort of Singorgarh was built by Rájá Belo, one of the Chandel Rájás of Mahoba. But none of my informants had ever heard of Rájá Belo Chandel; and I have very grave doubts as to the Chandel rule having ever extended so far to the south."

"The whole of this part of the country would appear to have belonged to the Parihárs or Pratihárs, as we find was actually the case in A. D. 1307, when these monoliths were erected. But the Pratihárs were tributary to the great kings of Chedi, whose rule certainly extended as far north as Bharhut and Kálinjar. The latter place was recovered by the Chandels in the 11th century; but the Kulachuris still held the country about Bharhut in the 12th century."

Sir William Sleeman, however, was an accurate and careful inquirer, and traditions recorded by him demand careful consideration, and although General Cunningham's informants knew nothing of Rájá Belo, there is some evidence of his existence, and also of the fact that Bilhari was at one time part of the Chandel dominions.

It is true that the genealogies of the regnant Chandel princes given in the inscriptions do not include the name of Rájá Belo or Belá, but it is also true that the name is included in all the bardic lists, and that it is traditionally remembered.

The lake at Jaitpur, called the Belá Tál is supposed to be named after Rájá Bel Brihm, and is said to have been constructed in the year 1200 Samvat = 1143 A. D. This date, which was that given to both Mr. Wigram and myself, is probably only a round number. Mr. Carne, formerly Assistant Collector in charge of Mahoba and Jaitpur, was told that the exact date was 1268 S. = 1211 A. D., but that date is certainly too late, the Chandels having lost Mahoba in 1182 A. D.

A Bel *khera* exists at Bíjanagar near Mahoba, and at Ajnar there is an ancient well named Belá, and ascribed to the Chandels.

Several instances are known of works ascribed by tradition to Chandel chiefs who find no place in the authentic lists of regnant monarchs; for example, the Ratan Ságar, with a fine temple on the embankment, at Urwára in Pargana Mahoba, and the Barsí Talao, with temples, near Pahra in the same pargana, are ascribed respectively to Ratan Brahm and Bár or Bál Brahm Chandels, and are evidently of Chandel origin.

Bár Brahm (Bála Varmma) is also believed to have built the fort of Bárigaṛh, now in native territory, some ten miles distant from Mahoba.

Bár Brahm and Ratan Brahm, like Bel Brahm, are included in the bardic lists. All three were probably, like Pratápa Varmma and Sallakshana Varmma of the inscriptions, younger scions of the royal house, and really executed the works which bear their names.

There is no reason I think to doubt Sir Wm. Sleeman's assertion that in his time an inscription existed at Kondalpur, in which the name of the Chandel Rájá was read as 'Mulun Deo' and the date as Samvat 815.

There was no Rájá named Malan Deo, and it is an obvious correction to read Madana Deva, and it is equally obvious that the date 815, if correctly read, should not be referred to the Vikrama era, for there were no Chandel Rajas in 758 A. D.

Dates have often been misread, and I think it most likely that in this case the first figure was wrongly read, and that the real date was 915 of the Chedi Samvat = A. D. 1164, which year would fall within, but at the close, of Madana Varmma's reign.

Sir Wm. Sleeman's statement that Bilhari was included in the Chandel dominions is fully borne out by the following statement, which appears to be based on independently obtained information :—

"A local governor appointed by the Chandels of Mahoba was stationed at Bilharí in Jabalpur, to whom the territory, now comprised in the Ságor and Damoh districts was subordinate."*

The fact of a temporary Chandel occupation of Bilharí is not inconsistent with the existence of a Kulachuri inscription, dated 909 K. S. = 1158 A. D., at Bharhut far north of Jabalpur,† for I think it probable that the Chandel attack did not take place till about 1160, the Kondalpur inscription having been set up by Madana Varmma, according to my theory, in 1164.

But even if the Chandel success was gained at an earlier date, the Kulachuri chief at Bharhut may well have retained local power in subordination to the conqueror.

The conquest of one native state by another does not necessarily imply the extinction of the dynasty of the defeated chieftain.

On a review of all the evidence I believe that late in the reign of Madana Varmma the Chandel dominions included Bilharí, which was administered by a local governor, who was most probably a scion of the Chandel house, known as Rájá Belá or Belo.

(XVI.) *Paramárdi Deva (Parmál or Parmár).*

Date circa 1165 *to* 1202 *A. D.*

This prince is commonly, though inaccurately, spoken of as the last of his dynasty; his defeat by Rájá Pirthiráj of Delhi having impressed itself on the popular memory.

He appears to have been the son of Madana Varmma, and was certainly his immediate successor, but it is curious that none of the published

---

* Central Provinces Gazetteer, 2nd edition, p. 176.

† Arch. Report, IX, 94.

P20720

inscriptions give the genealogy of Paramárdi Deva; nor is any coin of his known, and there is only known one inscription of his of which we can say that we are certain of the date.

General Cunningham indeed (Arch. Rep. II, 447) affirms that "of Parmál or Paramárdi Deva there are three dated inscriptions ranging from S. 1224 to S. 1240, or A. D. 1167 to 1183."

But on consulting his list of inscriptions on the next page we find that one of them is the Mahoba inscription dated 1240, and another Maisey's No. I inscription, which is cited as being dated 1228 S.

Now, the Mahoba inscription dated 1240 S. is that at present built into the wall of the Engineer's bungalow near Mahoba, from which the Rájá's name is lost, and the date of Maisey's No. I inscription is extremely doubtful.

As published and translated that inscription bears the date of S. 1298 and not 1228.* Other readings are S. 1209 and S. 1198.§

The inscription undoubtedly commemorates a king named Paramárdi Deva, but until the date is definitely settled, we are not entitled even to assume that the person commemorated was Paramárdi Deva Chandel, who died in 1202 A. D. or S. 1259.

Of the proposed readings of the date the only one which falls within the limits of Parmál's reign is that of S. 1228 = A. D. 1171, proposed by General Cunningham, but unfortunately he assigns no reason for so reading the date, and it is therefore impossible to accept with confidence his reading.

The "three dated inscriptions" of Parmal thus dwindle down to one, that, namely, dated S. 1224 at Mahoba, and even this document is not now to be found, and General Cunningham gives no hint as to the nature of the inscription, or the precise locality where he found it.

Rájá Parmál is the only prince of the Chandel race whose name is widely known, but were it not, (as we shall see in Part III of this paper) that he is mentioned by the Muhammadan historians, we should know almost nothing of his reign.

The detailed particulars respecting it given by Chand and popular tradition are in part obviously mythical, and in part, (*e. g.*, as to the alleged retirement to Gya) can be proved untrue.

There is not even any building or tank of which Parmál can be said with certainty to have been the constructor. Popular tradition ascribes to him in a vague way a great part of the antiquities in the country.

---

* J. A. S. B. XVII, (1) pp. 313-317.

§ Gazetteer, N. W. P. Vol. I, 15, note. The same note refers to inscriptions of Parmál's dated 1177 and 1178 A. D. apparently on the authority of Pogson's History of the Boondelas, but I have been unable to verify the reference.

Parmál was certainly defeated and expelled from Mahoba by Rájá Pirthiráj of Delhi in 1182 A. D., and the tale of the conflict as told by Chand has captivated the popular imagination and has become the theme of innumerable songs and legends throughout Upper India.

Chand would have us believe that the defeat was so crushing and overwhelming, that only 200 of Parmál's followers escaped destruction, but his story is manifestly a gross exaggeration, for twenty years later Parmál was able to make a "desperate resistance" against Kutb-ud-dín, and was the master of great wealth, which became the spoil of his Musalmán conqueror.

The heroes of Chand's Mahoba Khand are the miraculously endowed brother heroes, Alhá and Udal, and the poet, in order to enhance their glory, depicts Parmál as a weak coward, swayed by the treacherous counsels of Máhil Parihár. All this is probably pure myth, for if Parmál could make a "desperate resistance in the field" in 1202, it is not likely that he would have sought personal safety in craven flight in 1182.

It is not known whether or not Parmál succeeded in retaining during any part of his reign the territories near the Narbadá, which had been conquered by his predecessor Madana Varmma Deva, but he certainly cannot have retained them after the loss of Mahoba in 1182.

The victory of Pirthiráj may not have been so overwhelming as it is represented by legend to have been, but it certainly marks an epoch in Bundelkhand history, and after 1182 the Chandels seem to have sunk to the position of small local Rájás, their degradation being consummated by Kutb-ud-dín's raid in 1202.

I therefore consider 1182 as the date of the close of the Chandel period, that is to say, of the period during which the Chandels were the leading power in Bundelkhand, and during which they wrought works deserving to be held in remembrance.

The few and indistinct existing notices of Parmál's obscure successors will be discussed in Part III of this paper.

Chronological Table of the Chandel Dynasty 831—1182 *A. D.*

No.	Rájá.	Date A. D.	Event.	Authority.
1	Nánika.	831	Accession, and overthrow of Parihárs at Mahoba.	Tradition and calculation.
2	Vákpatí.	850	Accession.	Date calculated.
		862	Bhoja king of Kanauj in possession of Chanderí.	Inscription at Chanderí, Arch. Report, IX, 84.
3	Vijaya.	870	Accession.	Date calculated.
4	Ráhila.	890	Accession.	......
5	Harsha.	910	Accession.	......
6	Yáso Varmma.	930	Accession.	......
7	Dhanga.	950	Accession.	......
		954	Building temple at Khajuráho.	Chaturbhuj inscription.
		978	Assisted in battle of Lamghán.	Farishta.
		998	Grant of land.	Nunaura, No. II inscription.
		999	Death at Prayág.	Lálájí inscription.
8	Gaṇḍa Deva.	999	Accession.	Ditto and Mau Chhatarpur inscription.
		1008	Assisted Rájá Jaipál of Lahore against Mahmúd of Ghazní.	Farishta.
		1011	Rájá Kokalla.	Inscription at Khajuráho.
		1021	Conquered Kanauj.	Farishta.
		1023	Surrendered Kálanjar to Mahmúd of Ghazní.	
9	Vidhyádhara Deva.	1025	Accession.	Date calculated.
		1030	Gánggaya Deva king of Chedí ruling at Tripuri.	Abú Rihán.
10	Vijaya Pála Deva	1035	Accession.	Calculated date.
11	Kirtti Varmma Deva the First, *alias* Deva Varmma Deva *alias* Bhúmipála.	1049	Accession.	Date calculated.
		1050	Grant of land by Deva Varmma Deva.	Nunaura, No. I inscription.
		circa. 1080	Defeat of Karna of Chedi. First issue of Chandel coinage.	Exact date conjectured.
		1097	In possession of fort of Deogarh.	Inscription at Deogarh.

No.	Rájá.	Date A. D.	Event.	Authority.
12	Sallakshana Varmma Deva.	1100	Accession.	Date calculated.
13	Jaya Varmma Deva *alias* Kírtti Varmma Deva the Second.	1110	Accession.	Date calculated.
		1116	Lálájí inscription rewritten.	Lálájí inscription.
14	Prithví Varmma Deva.	1120	Accession.	Date calculated.
15	Madana Varmma Deva.	1130	Accession.	Date calculated.
		1131	Image of Varadá set up at Kálinjar.	Maisey's, No. IV inscription.
		1133	Grant of land.	Augásí copper plate.
		circa. 1143	Construction of Bela Tál at Jaitpur.	Tradition.
		1154	Jain image set up at Mahoba.	Nemináth inscription.
		1158	Ditto ditto.	Sumatináth ditto.
		"	Ditto, at Khajuráho.	Sambhunáth ditto.
		circa. 1160	Conquest of Chedi.	Date conjectured.
		1163	Jain image set up at Mahoba.	Ajitanáth inscription.
		1164?	Inscription set up at Kondalpur?	Sir Wm. Sleeman.
		circa. 1160 to 1165	Rájá Belo built Singorgarh. Bilhari held by a Chandel governor.	Ditto, and Central Provinces Gazetteer.
16	Paramárddi Deva, known as Parmál or Parmár.	1165	Accession.	Date calculated.
		1167	An inscription recorded.	Inscription.
		?1171	Inscription recorded at Kálinjar.	? Inscription.
		1182	Capture of Mahoba by Pírthiráj of Delhi.	Inscription of Pírthiráj (unpublished.

Inscriptions of the Chandel Dynasty of Bundelkhand.

No.	Inscription.	Date.		Reference.
		Samvat.	A. D.	
1	Chaturbhuj.	1011	954	The inscription is on a large slab built into the wall on the right side of the entrance to the Chaturbhuj temple at Khajuráho. It has never been published nor translated. Noticed in Arch. Report, II, 426.
2	Jinanáth.	1011	954	On left jamb of door of Jinanáth's temple at Khajuráho. Never published nor translated in full. Abstract translations in Arch. Report, II, 433 and J. A. S. B. XXIX, p. 395. See also J. A S. B. XLVIII, Part I, p. 287 and plate.
3	Nunaura, No. II.	1055	998	Copperplate; original in Indian Museum. Transcribed and translated in full in J. A. S. B. XLVII, pp. 80 seqq.
4	Lálájí or Viśvanáth.	1056	999	On a large slab built into wall inside entrance of Lálájí or Viśvanáth temple at Khajuráho. Translated by Mr. Sutherland in J. A. S. B. for 1839. Vol. VIII, p. 159, but with many errors, some of which were corrected by General Cunningham in Proc. A. S. B. for 1865 (1) p. 99.
5	Nunaura, No. I.	1107	1050	As No. 3.
6	Deogarh.	1154	1097	Engraved on rock. Neither published nor translated; referred to in Arch. Report, IX, 108.
7	Inscription at Mahoba.	—	—	Gave genealogy from Dhanga to Kírtti Varmma. Mentioned in Arch. Report, II, 447, but never published nor translated, and the original not now to be found.
8	Supplement to Lálájí inscription.	1137	1116	As No. 4.
9	Maisey's No. IV.	1188	1131	Original at Kálinjar, near figure of 'Mahádeo ká putra'; letters very faint. Transcribed and translated in J. A. S. B. XVII, (1) pp. 191 and 321-322. Text and translation require revision. Erroneously mentioned as dated in S. 1288 in Arch. Report, II, 448, number 33.
10	Augásí.	1190	1133	Copper plate; original with Mr. A. Cadell, C. S. Facsmile and transcript and translation in J. A. S. B. Vol. XLVII, Part I, pp. 73 seqq.

No.	Inscription.	Date.		Reference.
		Samvat.	A. D.	
11	Nemináth.	1211	1154	Jain Statue at Mahoba. Noticed by General Cunningham in Arch. Report, II, 448. The position of the statue is not known.
12	Sambhunáth.	1215	1158	Jain statue at Khajuráho. Translated in Arch. Report, II, 435 and noticed *ibid.* p. 448. Position of statue now is not known.
13	Sumatináth.	1215	1158	Jain statue lying in water under embankment of Kírat Sagar at Mahoba. Facsmile of part of inscription in J. A. S. B. Vol. XLVIII, Part I, Plate XV.
14	Ajitanáth.	1220	1163	Jain statue at Mahoba, position not now known. Noticed in Arch. Report, II, 448.
15	Mau-Chatarpur.	—	—	Translated by Lieut. Price in Asiatic Researches, XII, 351.
16	Kondalpur. (?)	? 915 of Chedi era.	1164	Mentioned as existing at a temple in Kondalpur, Central Provinces, and said to be dated 815 Samvat by Sir Wm. Sleeman in J. A. S. B. for 1837. Vol. VI, (2), p. 627 note. *Vide supra* discussion of reign of Madana Varmma.
17	Mahoba.	1224	1167	Inscription at Mahoba, mentioned in list Arch. Report, II, 448, but nature of inscription and precise locality not mentioned. Original not now forthcoming.
18	Maisey's No. I.	? 1228	? 1171	J. A. S. B. XVII, (1) pp. 313-317. Gazetteer N. W. P. Vol. I, p. 15 note. Arch. Report, II, 448. Original at Kálinjar.
19	———	1239	1182	Unpublished inscription of Prithiráj, referred to by Genl. Cunningham, Arch. Report, IX, 153, and in private letter. It records defeat of Parmál by Pirthiráj.
20	Mahoba, inscription at bungalow.	1240	1183	Abstract given in Proc. A. S. B. for 1879, p. 243. Original at Engineer's bungalow near Mahoba. Full text and translation not yet published.
21	Dahi copper plate.	1337	1280	Arch. Report, II, 455. In No. 34 of table *ibid.* p. 448, the name of the Rájá is wrongly given as Víra Varmma. Neither original nor copy forthcoming, nor translation.
22	Jayadúrga, (? Ajegarh or Kálinjar) Inscription.	1345	1288	J. A. S. B. VI, 881, and Part III of this essay.
23	Maisey's No. II.	—	—	J. A. S. B. XVII, (1) 317-320, transcript and translation; original at Kálinjar. No date; but quoted in No. 36 of table Arch. Report II, 448 as being dated S. 1372 = A. D. 1315.

PART III.

THE POST-CHANDEL PERIOD (1182-1352 A. D.)

The period of Bundelkhand history between the capture of Mahoba by Rájá Prithíráj in 1182 A. D.* and the rise of the Bundela power in the fourteenth century is extremely obscure, and has, for lack of materials, been passed over almost in silence by writers on the history and antiquities of Bundelkhand.

I cannot pretend to recover very much of the forgotten history of this period, but a minute examination of local traditions, and collation of these with the few available historical authorities remove to some extent the darkness which has hitherto enveloped the history of Bundelkhand for about a century and a half.

A curious error has been made by several writers† with regard to the date of Kutb-ud-dín Aibak's expedition into Bundelkhand, and, inasmuch as the discussion to follow requires the exact fixation of this date for a basis, I must first examine this point.

General Cunningham asserts that the Chandel Rájá Parmál was twice attacked and defeated by Kutb-ud-dín Aibak.

I propose to show that the assertion in question is based on a misconception of the meaning of Farishta, the authority cited, and that in reality but one attack was made.

General Cunningham's words are :—

"After this (*scilicet* the Chauhán victory) Parmál reigned at Kálinjar, where he was attacked by Kutb-ud-dín Aibak, to whom he capitulated in A. D. 1196.

"He was again attacked and defeated in 1202, when Aibak, dismounting his cavalry, laid siege to Kálinjar."‡

Particulars of the siege are then given, with a reference to Briggs' Farishta, Volume I, pages 180 to 197.

I have been much surprised, on consulting that work, to find that Farishta really speaks of but one expedition by Kutb-ud-dín against Kálinjar, that, namely, which took place in A. H. 599 = A. D. 1202.

---

* This date is equivalent to 1239 Samvat and has been adopted by General Cunningham on the authority of an unpublished inscription of Prithiráj in his possession. The date is given sometimes as 1183 or 1184.

† *E. g.*, besides General Cunningham, by Elphinstone (Cowell's edition, pp. 365-6) and N. W. P. Gaz. I, 527.

‡ Arch. Survey Report, II, 456. For a discussion of the correct meaning and spelling of the word Aibak, and some remarks on the date of the expedition, see Mr. Blochmann's paper in J. A. S. B., Vol. XLIV, Part I, pp. 277-279.

On page 180 the words of our author are—"In the year 593 Kutb-ud-dín marched from Dehli, and reduced Nehrwala, in Guzerat, with all its dependencies. After his return, he took the fort of Kálinjar, Kálpí, and Budaon."

Farishta then proceeds with the history of Muhammad Ghorí (*alias* Shaháb-ud-dín) and an account of the early life of Kutb-ud-dín, and continues on p. 197 as follows:

"In the year 599, he mustered his forces, and marched against Kálinjar, where he was opposed by the Rájá of that country, whom he defeated; then, dismounting his cavalry, he laid siege to the fort." The details are then related as quoted by General Cunningham, and Farishta goes on to say—"Kutb-ud-dín now marched to Mahoba, the capital of the principality of Kálpí, which place he also subdued, together with Budaon, lying between the rivers Jumna and Ganges."

It is obvious that the passage on page 197 is only an amplification of that on page 180, and that both passages refer to the same events.

In the earlier passage Farishta, does not say, as he is made to say by General Cunningham, that Kutb-ud-dín reduced Kálinjar in A. H. 593 = A. D. 1196, but he says that in that year he reduced Nehrwala in Guzerat, and, '*after his return*' took Kálinjar, Kálpí, and Budáon, all the four places named being separated from each other by long distances.

Thus it is clearly proved that the supposed conquest of Mahoba, and Kálinjar by Kutb-ud-dín in 1196 A. D. never really occurred. Gwaliar, the other great fortress of Bundelkhand, was, however, attacked in that year by Kutb-ud-dín, who forced its ruler to pay tribute.*

It may be worth noticing that Dow's mistake† in calling by the name of Gola the Rájá of Kálinjar attacked by Kutb-ud-dín, was evidently due to his confounding the Rájá, who is not named by Farishta, with Gola Rai of Ajmír,‡ who is mentioned in pages 179 and 194, 195 of Brigg's translation.

The contemporary Táj-ul Maásir correctly states the name of the Rájá of Kálinjar as Parmár in a passage which I shall quote at length, as it is of considerable historical value, and affords further proof, if proof be needed, that Kutb-ud-dín's only expedition against Kálinjar occurred in 599 H.

Capture of the Fort of Kálinjar.

"In the year 599 H. (1202 A. D.) Kutb-ud-dín proceeded to the investment of Kálinjar, on which expedition he was accompanied by the

---

* Dowson's Elliot, II, 227-8.

† Quoted by General Cunningham *loc. cit.* and in Gazetteer, I, 16.

‡ For Gola Rai should be read "the Kola (natural son) of the Rai of Ajmír." (Dowson's Elliot, II, 214.) [The term *Gola* has been much misunderstood. It is most probably identical with the Rájpút tribal name *Gora* or *Garuá*. The Gors of Ajmír are well known; the substitution of *l* for *r* is not uncommon in Hindí; the spelling "*kola*" is an error which has further led to the erroneous interpretation "natural son." Ed.]

Sahib-Kirán, Shams-ud-dín Altamsh. Encomiums on both warriors follow through several pages. 'The accursed Parmár,' the Rái of Kálinjar, fled into the fort after a desperate resistance in the field, and afterwards surrendered himself, and 'placed the collar of subjection' round his neck, and, on his promise of allegiance, was admitted to the same favours as his ancestor had experienced from Mahmúd Subuktigín, and engaged to make a payment of tribute and elephants, but he died a natural death before he could execute any of his engagements. His Díwán, or Mahtea, by name Aj Deo, was not disposed to surrender so easily as his master, and gave his enemies much trouble, until he was compelled to capitulate, in consequence of severe drought having dried up all the reservoirs of water in the forts. 'On Monday, the 20th of Rajab, the garrison, in an extreme state of weakness and distraction, came out of the fort, and by compulsion left their native place empty,' 'and the fort of Kálinjar which was celebrated throughout the world for being as strong as the wall of Alexander' was taken.

'The temples were converted into mosques and abodes of goodness, and the ejaculations of the bead-counters and the voices of the summoners to prayer ascended to the highest heaven, and the very name of idolatry was annihilated.' 'Fifty thousand men came under the collar of slavery, and the plain became black as pitch with Hindús.' Elephants and cattle, and countless arms also, became the spoil of the victors.

'The reins of victory were then directed towards Mahoba, and the government of Kálinjar was conferred on Hazabbaru-d-dín Hasan Arnal. When Kutb-d-dín was satisfied with all the arrangements made in that quarter, he went towards Badáún,* 'which is one of the mothers of cities, and one of the chiefest of the country of Hind.' "

Chand's story that Parmál (Parmár or Paramárdi) after his defeat by Rájá Prithiráj, retired to Gayá, and died there, is refuted by the sober and authoritative statement of the Muhammadan historian.

This is but one of many proofs, which might be cited, to show that the Chand Ráesa, as we now have it, is misleading, and all but worthless for the purposes of the historian.†

According to Chand the lieutenant named Pajún, who was left behind by Rájá Prithiráj, was driven from Mahoba by Samarjit, a son of Rájá Parmál, with the help of Narsingh, an officer of Rájá Jaichand of Kanauj.

---

* "Hammer (Gemäld, IV, 185) following Briggs (Farishta, I, 198) places Budaon between the Ganges and the Jumna, for which there is no authority in the original. It is in Rohilkhand, to the east of the Ganges."

† [The great Epic of Chand is hardly sufficiently known as yet, to warrant such a sweeping statement. Ed.]

Samarjit, according to the same authority, then became Rájá between Kálinjar and Gayá, and was ultimately killed by one Binae-ud-dín, a Musalmán.

It is very doubtful whether there is any foundation of fact for this circumstantial narrative, because we know for certain that Rájá Parmál continued to reign at Kálinjar till 1202 A. D. when he died and was succeeded, as we shall see further on, by Trailokya Varmma. It is, however, possible that his son Samarjit may have temporarily occupied Mahoba, and that he may have been killed by a follower of Kutb-ud-dín.

Passing over for the moment all further consideration of the names and order of succession of the Chandel descendants of Parmál, I shall proceed to discuss the history of Bundelkhand in the period succeeding his death, so far as the scanty materials available will permit.

The Kanungo family at Mahoba has preserved in writing certain traditions, which I shall now set forth as a basis for the discussion of the historical data procurable.

According to these traditions, Parmál was succeeded in the government of Mahoba by his son Samarjit.

In Samvat 1220 Shaháb-ud-dín attacked Delhi, and conquered Hindustan and wrested Mahoba from Samarjit, and granted it to Taur Súba, who ruled for fifty years. His government not being successful, the emperor granted Mahoba to his allies the Mewátis, who held the place for 40 years. Then the Goṇḍs from Manḍla attacked and plundered Mahoba and ruled there for 14 years. After this Manmath Gaharwár of Benares, a descendant of the family who ruled Mahoba, prior to the Chandels, recovered possession, and Gaharwárs ruled for 100 years.

Then Ajaipál, and Bhar and others, who were Jogis, and great magicians, one greater than the other, and were Rájás in Ujain,* advanced from that country. Ajaipál conquered Ajmír, and Rájá Bhar captured Mahoba, and ultimately both chiefs conquered all Hindustán. They hated the Musalmáns and oppressed them and drove them out of the cities, displeasing God thereby,† whereupon the Musalmáns laid their complaints before the king of Arabia, from which country Malik Hasn Shah came with an army and in a great battle defeated Rájá Bhar, whose sovereignty devolved on the king of Arabia. Rájá Bhar's fourteen sons were slain, and their wives, wrapping themselves in their garments, were consumed without the aid of earthly fire. Malik Hasn Shah was wounded in the battle and died at Mahoba, and his shrine exists to this day in the adjoining township of Fatehpur.

---

* In J. A. S. B., Part I, for 1877 p. 5, I unfortunately misread the MS. and printed "Jains and Jogis" instead of "Jogis from Ujain."

† This phrase shows that the tradition has passed through a Musalmán channel.

Then the emperor of Delhi became sovereign of the country, and made over Mahoba to the rule of the Khangárs of Gaṛh Kurár.* Arjun Pál Gaharwár, who had been encouraged by the goddess Deví with a promise that he should found the Bundela Ráj, entered the service of the Khangár chief, who appointed him Bakshí of his army. On an occasion when the Khangárs had gone towards Bánda to attend a wedding, Arjun Pál lay in wait for them, and, attacking, slew them all. From his time, that is to say, from the year 1400 Samvat, is dated the rise of the Bundela Ráj.

No argument is needed to show that much of this legend is pure myth, but it can be forced to yield some grains of fact.

The tradition states wrongly the date of Shaháb-ud-dín's expedition. The attack on Mahoba and Kálinjar Kutb-ud-dín Aibak, the viceroy of Shaháb-ud-dín, really took place, as has been shown above, in A. H. 599 = 1202 A. D. = 1259 Samvat. Assuming then for a moment that the tradition, though wrong in dates, rightly gives the order of events, the time for these events is cut short at the beginning by 39 years.

I cannot find any mention elsewhere of Taur Súba, but there is no special reason to suppose that the name is an invention. The period of 50 years, assigned to his rule, is, however, undoubtedly excessive. His successors are said to have been Mewátís, and I should be inclined to date their arrival at some time in the first half of the 13th century, for during that period they are frequently mentioned as engaged in conflicts with the kings of Dehli, and they may well have succeeded in obtaining for a short time the governorship of Mahoba.

Násir-ud-dín temporarily reduced the Mewátís in the years 1247-50 A. D.

The mosque known as the Mughal mosque, which stands on the east end of the fort hill at Mahoba, and is built of the materials of a richly adorned Jain temple, was erected, it is said, by the Mewátís.

That the Gonḍs did really attack Mahoba at some time after the defeat of the Chandels is rendered probable by the existence of a few village traditions which refer to a post-Chandel occupation by Gonḍs.

The story that the Gonḍs were succeeded by Manmath of the Gaharwár dynasty is not corroborated from any other source, and the period of a hundred years assigned by the legend to this Gaharwár dynasty is of course impossible. I therefore reject altogether this part of the legend.

* Gaṛh Kurár is in the Orchha State some 17 miles from Jhánsí. The origin of the Khangárs is not known. They were probably a branch of one of the wild tribes such as Gonḍs, Kols, or Bhíls. A friend suggests to me that the word Khangár may simply mean 'swordsman,' and be derived from Sanskrit खड्ग a sword.

The legend about Ajaipál and Bhar is very curious, and has some solid foundation, for there is sufficient independent evidence (as will presently be shown) to prove beyond doubt that a Bhar Ráj did at one time exist at Mahoba.

The statement that Ajaipál and Bhar conquered all Hindustán must of course be regarded as a gross exaggeration, but even this statement is not altogether baseless.

I shall now proceed to examine in some detail the evidence which proves the former existence of Bhar chiefs at Mahoba and in the neighbourhood of, or at, Kálinjar.

The Kánungo family of Mahoba possess a copy of a *sanad*, which copy is attested by the signature of the Assistant Superintendent of Jalaun under date 17th December 1850.

The document from which the copy was taken, was, it is said, on paper and was lodged in court soon after the annexation of the Mahoba pargana in 1840, and was no doubt, along with the rest of the records, destroyed in the mutiny.

The language of the existing copy is modern Hindí, and for this reason, and also because the document destroyed in the mutiny was written on paper, it is certain that that document was not in itself an original, for a *sanad* dated 1337 Samvat would have been written on copper, and would almost certainly have been in the Sanskrit language. I see, however, no reason to suppose that the existing copy represents a forgery; I believe that it is a copy of a translation of a genuine grant, the original of which was lost long ago.

The document is to the following effect;—"On behalf of Srí Maharáj Adhiráj, Srí Maharája Srí Rájá Kírat Singh Jú Bhar the grant is made for subsistence to Srí Kanungo Chaudhrí Mádho Rám, Mansabdár, Faujdár, who exercises the functions; he is granted the villages Ṭíká Mau and Bíjanagar and Kaproera,* and 2 per cent. and a present of Rs. 2 for each village, and 9 *dáms* for each village at the *chabútra*, and in the city the customary dues, and in the town 350 bighas; let no one interfere, and let them be loyal.

Monday 9 Mágh Sudi,
Samvat 1337,
At Kálpí."

---

* These villages are all within a few miles of Mahoba, but the third is now in Native Territory.

In the absence of the original it is impossible to pronounce with certainty on the authenticity of this grant, but there is at least no doubt as to the genuineness of the copy now in the Kanungo's possession, and the family still hold revenue free part of the '350 bíghas in the town,' and they say that under the various native rulers they enjoyed the transit and other dues referred to in the grant.

The note 'at Kálpí' is explained by the consideration that Kálpí and Mohaba were generally included in a single district. In Kutb-ud-dín's time Mahoba was "the capital of the principality of Kálpí."

If then this Kánúngo's *sanad* be authentic, one date (*viz.*, 1337 S. = 1280 A. D.) in the period of the Bhar rule at Mahoba is fixed decisively, and we also learn that the Bhar dominions included Kálpí.

These dominions, as we shall see, also included Kálinjar, and I am disposed to identify the Kírat Jú Bhar of the Kanungo's *sanad* with the Rájá Kírat Pál of Kálinjar who is mentioned in a Mahoba tradition obtained from a different source.

This tradition is recorded in a long undated Persian manuscript belonging to the guardian of the shrine of Pír Mobárik Sháh at Mahoba, which gives an account of the foundation of that shrine in the year 1309 Samvat, in which year it is related that Rájá Kírat Pál of Kálinjar visited the shrine and endowed it with 700 bighas of land revenue free. This land is still held revenue free by the guardian of the shrine.*

The historical value of this tradition is much impaired by the fact that the manuscript gives four inconsistent notes of time.

It records that (α) the shrine was founded by Pír Mobárik Sháh, a disciple of Ráju who was a disciple of Jahána Jahángasht; (β) in the Samvat year 1309; (γ) during the reign of Sultán Ibráhím Sharki; and, further, (δ) that, after the time of Rájá Kírat Pál of Kálinjar, the shrine was visited by Tughlak Sháh and Prince Daryá Khán and others.

Now, (α) Ráju son of Sayyad Jalál Makhdúm Jaháníya, erected his father's tomb at Kanauj in A. H. 881 = A. D. 1476†; (β) Samvat 1309 = A. D. 1252; (γ) Sultán Ibráhím Shákí reigned 1401-1440 A. D. and (δ) the date of Ghiyás-ud-dín Tughlak's mosque at Mahoba is A. D. 1322, and Daryá Khán was killed in A. D. 1387.

Supposing there to be any truth in the narrative at all, I accept the date 1252 A. D. as being in itself much more probable than any one of the other inconsistent dates which might be assumed by calculation from the data given above.

---

* The exact area as recently surveyed is 637 bighas, 14 biswas. Fuller details of the Mobárik Sháh legend will be found in the Hamirpur Settlement Report, Allahabad, 1880, p. 29.

† Cunningham, Arch. Report, I, 289.

We may be quite certain that the massive temple, on the site and with the materials of which the shrine of Pír Mobárik Sháh is constructed, was not allowed to remain until the middle or end of the 15th century A. D.

Assuming then that the date 1309 S. = 1252 A. D. is correct, it is difficult to avoid identifying this Rájá Kírat Pál with the Rájá Kírat Singh of the *sanad*. The one reign may easily have embraced the dates 1252 and 1280 A. D. As we shall see presently, Kírat Pál of Kálinjar, if he really flourished in the year 1280 A. D. cannot have been a Chandel prince, for the Chandel Rájá in that year was Sandhira Varmma.

In another paper I have already mentioned* that the local tradition of Mauza Bharwára, (which village is situated about 21 miles W. N. W. of Mahoba), ascribes the foundation of that village to Lodhís in the year 1300 S. = 1243 A. D. during the reign of Rájá Bhar of Mahoba.

The neighbouring village of Bijaipur is likewise believed to have been founded by Lodhis during the time of the Bhar Ráj. It was then seized for a time by the Chhindi or Chheri Bherí Thákurs (who are remembered in many villages in the neighbourhood, and are by some identified with the Bhars), and was recovered by the Lodhís under the leadership of Amán Balí in 1400 S. = 1343 A. D.

The people of Bhateora Kalán, in the same part of the country, have a tradition that the original Lodhí inhabitants of their village were destroyed by the Chherí Bherí Thákurs, with the exception of one woman with child, who escaped. Her son Amán Bálí on reaching man's estate slew the Chherí Bherí Thákurs, while they were intoxicated at a festival, and cast their bodies into a well.† His son founded twelve and a half villages, including Bharwára and Bijaipur. The dates given in these traditions are evidently round numbers, and there can be no doubt that in reality the colonization of the twelve and a half villages must have occupied a considerable time. Tradition always foreshortens, so to speak, the picture of the past. The above quoted traditions may I think be regarded as harmonizing with each other as closely as it is reasonable to expect.

The Muhammadan historians afford another clue to the date of the Bhar chiefs of Kálinjar and Mahoba.

Farishta (Briggs, I, 237) relates that: " In the month of Shaban 645, Násir-ud-dín Mahmúd proceeded with his troops through the country which lies between the rivers Ganges and Jumna, and after an obstinate siege, the fort of Bitunda‡ yielded to his arms. He then continued his march towards Kurra, Ghiás-ud-dín Balban commanding the vanguard. He was met at Karra by the Rájás Dalaki and Malaki, whom he defeated and plundered, taking many of their families prisoners. These two Rájás had seized all the country to the south of the Jumna, and had destroyed the king's garrisons from Malwa to Karra. They resided at Kálinjar. After these exploits Násir-ud-dín returned to Delhi."

---

* J. A. S. B., Part I, for 1877, page 5.

† Similar traditions as to the destruction of Ahírs, Khangárs and other tribes by Lodhí or Thákur invaders are not uncommon in Bundelkhand.

‡ The reading of this name is doubtful.

Shaban A. D. 645 = Dec. 1247 A. D. the attack on "Dalaki and Malaki," therefore took place in 1248 A. D.

Col. Briggs was of opinion (*note*) that "the Muhammadan author from whom Farishta copies, has, probably, made some mistake in the names," but the names can now be shown to be substantially correct.

It is related by Minháj-us-Siráj in the Tabakát-i-Násirí, that in 645 H. (*i. e.*, early in 1248 A. D.) the imperial army under Ulúgh Khán, marched to Karrá, and "there was in this neighbourhood a Rána (ران بود) who was called Dalaki-wa-Malaki. He had many dependants, countless fighting men, great dominions and wealth, fortified places, and hills and defiles extremely difficult of access. All these he (Ulúgh Khán) ravaged.

"He took prisoners the sons, wives, and dependants of the accursed one, and secured great booty. He secured 1,500 horses of a peculiar breed, which he brought in for the use of the army. His other booty may be inferred from this."*

Minháj-us-Siráj gives another account further on in his book of the expedition against Dalaki-wa-Malakí, which is worth quoting, because it contains some interesting details not given in the earlier passage of the Tabakát-i-Násirí, nor by Farishta.

"Ulúgh Khán was sent with some other generals and a Muhammadan force to oppose Dalakí-wa-Malakí.

"This was a Rána in the vicinity of the Jumna, between Kálinjar and Karrá, over whom the Ráis of Kálinjar and Málwa had no authority. He had numerous followers and ample wealth; he ruled wisely; his fortresses were strong and secure; in his territories the defiles were arduous, the mountains rugged, and the jungles many. No Muhammadan army had ever penetrated to his dwelling place.

"When Ulúgh Khán reached his abode, the Rána took such care for the safety of himself and his family, that he kept quiet from the dawn till the time of evening prayer, and when it grew dark he fled to some more secure place.

"At daybreak, the Muhammadan army entered his abode and then pursued him, but the accursed infidel had escaped into the lofty mountains, to an inaccessible spot, impossible to reach except by stratagem and the use of ropes and ladders. Ulúgh Khán incited his soldiers to the attempt, and under his able direction, they succeeded in taking the place. All the infidel's wives, dependants and children fell into the hands of the victors with much cattle, many horses and slaves. Indeed the spoil that was secured exceeded all computation.

---

* Dowson's Elliot, II, 348.

At the beginning of Shawwál 645 H. (Feb. 1248), the force returned to the royal camp with their booty."*

It would appear from this passage that Farishta is in error when he asserts that Dalaki-wa-Malakí resided at Kálinjar. His abode was between Kálinjar and Karra, and no Muhammadan army had ever penetrated to it, a description which by no means applied to Kálinjar, which had been visited both by Mahmúd and Kutb-ud-dín. The contemporary author further is careful to point out that the Rána Dalaki-wa-Malakí was distinct from the Rái of Kálinjar, who had no authority over him.

At first sight no connection is perceptible between the Rájá Dalaki-wa-Malakí and the Bhar chiefs of Kálinjar and Mahoba, but the argument developed in the following extract raises at the least a strong probability that they are identical.

"The Bhars up to a late period, occupied and owned considerable portions of Etá, Cawnpore, Fatehpur, and Allahabad. ......tradition points them out as the rulers of the middle and lower Doáb at an early period. Mr. Benett in a note† on the Bhar kings of Eastern Oudh, quotes the local traditions regarding Bal and Dal, the great Bhar heroes of that province, whose names appear in the legends of 1000 to 1400 A. D.

"Again the ancestors of the great Kánhpuriya clan of Rájputs, Sahas and Rahas, are said to have completed the conquest of the western half of the Partábgaṛh district in Oudh, by inflicting a decisive defeat on the Bhars, whose leaders Biloki and Tiloki were left dead on the battle field.

"The Bais also have a tradition that the founder of the house of Dúndia Khera defeated the Bhar leaders Dal and Bal,‡ on the banks of the Ganges in the Rái Bareli district; and another tradition has it that the Bhars were destroyed by Ibráhím Sháh Sharkí [who reigned 1401-1440 A. D.] at Dalamau on the Ganges, a place where Ahírs yearly congregate and offer up milk to the *manes* of Dal and Bal at their reputed tomb.

"Mr. Benett has elsewhere shown that the Kánhpuriya leaders, Sahas and Rahas, were contemporaries of Abhaichand, and lived in the thirteenth century."

---

* Dowson's Elliot, II, 366-7.

In Nov. 1251 A. D. Ulúgh Khán again marched "towards Málwa and Kálinjar." Ibid. p. 368.

† Indian Ant. I, 265. See also the same writer's Report on the Chief Clans of Roy Bareilly, pp. 5, 17, 18.

‡ The names are given as Tiloki and Biloki by Mr. Benett (Clans of Roy Bareilly, 17) who says that the Bhar chiefs were left dead on the battle field, and that their names are preserved in the neighbouring villages of Tiloi and Biloi.

The compiler of the Gazetteer then quotes the passage from Farishta, and the first extract from Minháj-us-Siráj, which I have given above, and proceeds with his argument as follows:

"From the similarity of names there can be no doubt but that the Dalaki-wa-Malakí of the Musalmán historians, the Tiloki and Biloki of the Kánhpuriyas, and the Dal and Bal of the Bais, refer to the Bhar princes of the Duáb, and west bank of the Jumna, who flourished about the middle of the thirteenth century."

After full consideration of the evidence I think that this identification must be accepted. The actual date of the great chief Dalaki-wa-Malakí (*alias* Dal and Bal, *alias* Tiloki and Biloki) is fixed by the Muhammadan historian, and the mention of the name in traditions referring to events of earlier or later date is easily explained when we remember the facility with which tradition in all countries associates the most diverse events with the names of popular idols.

It is not certain whether the name Dalaki-wa-Malakí and its equivalents are singular or plural. The Muhammadan historians use it as singular,* but the Rájput traditions affix the names to two brothers. I incline to accept the authority of the historian, and would suggest that the belief in the existence of the brothers has been caused by the circumstance that the name of the Rájá (whatever may have been its correct form) could be readily split up into two parts.

In a passage which just precedes my second extract from the Tabakát-i-Násirí the author notices that Ulúgh Khán, not only captured, but killed Dalaki-wa-Malakí (قتل و اسر دلكي و ملكي).

The reader will perceive that the date thus obtained for the Bhar prince killed in 1248 A. D. in no wise interferes with our acceptance of the Mahoba dates 1252 and 1280 A. D. for Kírat Singh or Kírat Pál, who would appear to have been his immediate successor.

The detailed information given by the historians regarding Dalaki-wa-Malakí further prevents us from condemning as altogether incredible some of the traditional statements about Rájá Bhar of Mahoba. A chief, who in sober fact, had seized all the country to the south of the Jumna, and had destroyed the king's garrisons from Málwa to Karra, who ruled wisely, and who possessed the vast and peculiar wealth described by the historians, may well have been credited with having won the dominion of all Hindustán by magic arts. It is not even impossible that he may have come from Ujain in Málwa, as the legend affirms that he did. The movement of the

---

* Professor Dowson (II. 348 note) shows that in Farishta the name is singular, Briggs' translation being incorrect.

Bhars, so far as traced, has certainly been from west to east, and it may well be that the unknown origin of the tribe is to be sought in the hills and forests of Central India.

The Bhar chiet having attained so great a power in 1247-48 A. D., it is evident that such power cannot have been gained in a day, and we may safely say that 1240 A. D. is the latest date that can be assigned for the rise of the Bhar rule in Bundelkhand. The Chandel power was shattered, first by Prithiráj in 1182 A. D. and again, and more completely, twenty years later by Kutb-ud-dín in 1202 F.; the dynasty that had so long ruled over Chedi or Dáhal along the banks of the Narbada seems to have died out in the latter part of the twelfth century, and the Parihár kingdom of Gwáliar was overthrown by Altamsh in 1232 A. D. The country therefore was open to an attack, and I would place the incursion of the Bhars at a date not earlier than 1230 nor later than 1240.

The actual attack on Bundelkhand may have been, and probably was, directed from stations in the Doáb or Oudh, but, even admitting this, it may still be true that the Bhars came originally from Central India, and even that their great chief Dalaki-wa-Malakí came from that direction. However, I am not aware of any mention of the existence of Bhars to the south of the present Hamírpur District and of the line of the Kaimúr hills further to the east.

To return to our Mahoba Kánungo's tradition. Supposing that it correctly recites the *order* of events (excepting the episode of Manmath Gaharwár), then the rule of Taur Súba, that of the Mewátis, and that of the Gonḍs, must all be comprised between the years 1202 A. D., the date of Kutb-ud-dín's attack, and the year 1240, the latest possible date for the Bhar inroad.

The compiler of the Gazetteer (*loc. cit.*) attempts another identification of Dalaki-wa-Malakí which requires some discussion.

A long inscription dated 1345 Samvat = 1288 A. D. and relating to a statue of Hari set up by one Náná in a place called Jayadúrga is preserved in the museum of the Asiatic Society in Calcutta.

This inscription, in the North-West Provinces Gazetteer (I, pp. 16 and 453,) is said to have been 'found in the fort of Ajaigarh,' but it is not really certain where it was found. Jas. Prinsep "conjectures that it is one of those presented by General Stewart from Ajaigarh......or Kálinjar,"* and it is as likely to have come from one place as the other, if it came from either, for the two fortresses are only about 16 miles apart.

---

* J. A. S. B. VI. 881. In the translation the name of the town is given as Jayanagore, but in the Sanskrit transcript it is Jayadúrga. I shall call it the 'Jayadúrga inscription.'

Náná is described as belonging to the Káyath caste, and his descent is traced for seven generations back, his family being derived ultimately from the great Rishi Kasyapa. The residence of this family was at the famous city of Kausambi or Kosim on the Jumna, not many miles above Allahabad. Náná is praised in the following terms (vv. 24, 25). "His fame had reached the ears of the women on all sides; he was minister of the Chandrátraya kings (नरेन्द्राणाम्). He was known by the name of Náná, teacher of the religious laws and wisdom to the above dynasties, he was learned and agreeable, requiring not the advice of allies when he sent his horse to the Rájá Bhoja Varmma." The genealogy of Náná is as follows:—

Jánha *or* Haruka
|
Jalhan
|
Gangádhara
|
Kamala
|
Malika
|
Padam Siñha — Ratna Siñha — Yoga Siñha — Samara Siñha
|
Náná. (son of Ratna Siñha)

The compiler of the Gazetteer without hesitation identifies the Malkí of Farishta with the Malika of the inscription, and goes on to say—"On attaining the royal power, the Bhars were advanced to the dignity of Káyaths, and this fact is curiously borne out by inscriptions preserved in the old fort of Garhwa near Shiurájpur in the Allahabad District.*

"In addition to inscriptions of the Gupta princes of the second century, there are several others bearing date 1199 Samvat (1142 A. D.) recording gifts made by the Káyath Thákurs of the neighbouring villages, and several statues, three of which are dedicated to the Hindu triad. Along with these is one of the well known bearded Bhar figures, which in appearance and workmanship is of older date than the statues of Vishṇu, Shiva and Brahma, and is connected with a local Bhar dynasty by tradition.

"Both the fort of Garhwa and the other old forts in the neighbourhood well fulfil the description of the Musalmán historian [*scilicet* of Dalaki-wa-Malaki's fortress], hidden as they are among the outlying spurs of the Kaimor range, and it is worthy of remark that the principal village near Garhwa still bears the name of Bhargarh."

---

* Garhwa is 25 miles S. W. of Allahabad.

The argument here stated is to me quite unintelligible, and I am unable to trace any connection between the conclusion and the premises. What proof is there of the startling assertion that the Bhars, on attaining royal power, were advanced to the dignity of Káyaths, and how is this fact, if fact it be, curiously borne out by inscriptions preserved in the old fort of Garhwa?

The only answer given in the Gazetteer to these questions is the statement that there are at Garhwa statues dedicated by Káyath Thákurs in 1142 A. D., and that there is at the same place a Bhar statue, apparently older, and connected with traditions of a local Bhar dynasty.

But it was already well known that a Bhar dynasty once ruled over the eastern Doáb, and the mere fact that a Bhar statue was found among ruins along with statues of a different date dedicated by Káyaths is no evidence of the identity of Káyaths and Bhars.

Unless then there exists other evidence of their identity at Garhwa or elsewhere, it is plain that the Garhwa inscriptions and sculptures give no reason for believing in such identity.

The identification of the Káyath Malika of the Jayadúrga inscription with the Bhar chief Dalaki-wa-Malaki is moreover inconsistent with the evidence of the other documents discussed in this paper, as well as with the testimony of the inscription in question, which records that Náná Káyath, grandson of Malika, was a servant of the Chandel prince. We have learned from the Tabakát-i-Násiri that Dalaki-wa-Malaki, so far from being a servant of the Chandels, lived in an inaccessible fortress, and that the Rai of Kálinjar had no authority over him. By the "Rai of Kálinjar" no other can be meant than the reigning chief of the Chandel house.

A brief discussion of the few known facts concerning the successors of Parmál on the Chandel throne will facilitate the comprehension of the mediæval history of Bundelkhand.

It has been shown above that the Mahoba tradition concerning the retirement and death of Parmál is absolutely untrue, and that the statement of the same tradition that he was succeeded in Mahoba by his son Samarjit is probably erroneous.

The only substantial evidence regarding the names and regnal order of Parmál's immediate successors is that of the Dahi inscribed copper-plate, formerly in the possession of Colonel Ellis, who was at one time Political Agent at Nagod.

Unluckily this inscription is not now forthcoming, and no good copy of it seems to exist. The original was probably destroyed in the mutiny with the rest of Col. Ellis' property. The inscription is known only from General Cunningham's imperfect account of it, which is as follows:

"In a copper-plate inscription obtained by Col. Ellis, which is dated in S. 1337 or 1280, the genealogy was read by his Pândit as follows:—

1. Kundo Barm Deo.
2. Parmara Dea.
3. Trilok Barm Deo.
4. Sandin Barm Deo.

From an imperfect impression, which I saw in 1848, I read these names as—

1. Yádava Varmma Deva.
2. Paramárddi Deva.
3. Srí Trailokya Varmma Deva.
4. Srí Sandhira Varmma Deva.*

I am now, however, inclined to think that the first name must be *Madana Varmma Deva*, but as I cannot refer to the original, I must leave this point doubtful."†

It is I think quite impossible to doubt that the first name really was Madana Varmma Deva, but we are at present concerned with the third and fourth names, the readings of which by General Cunningham and the Pandit substantially agree; there being no doubt that the second name was that of Paramárdi, popularly known as Parmál or Parmár.

The inscription then proves that Parmál was succeeded by Trailokya Varmma Deva, and, as we know that Parmál died at Kalinjar in 1202 A. D., Trailokya, who was probably his son, must have come to the throne in that year. Trailokya's successor Sandhira Varmma Deva was reigning in 1280 A. D., seventy-eight years after the accession of his immediate predecessor. It is very unusual to find so long a period covered by two reigns. It is probable that the long interval was distributed pretty evenly between the two reigns, and we may assume that the inscription is dated towards the close of Sandhira Varmma's reign, the termination of which may provisionally be dated in the year of the inscription 1280. The date of Bhoja Varmma 1288 A. D. in the Jayadúrga inscription shows that Sandhira Varmma's reign cannot have extended much beyond 1280 A. D.

General Cunningham was inclined to prolong Trailokya Varmma's reign till 1248 A. D., and to identify him with Dalaki-wa-Malaki, but it is needless to discuss that theory which is amply refuted by the previous discussions in this paper.

I am disposed to assign the larger part of the interval between 1202 and 1280 to the reign of Sandhira Varmma, on the ground that Parmál had a long reign (from about 1165 to 1202) and that it is probable that his son, when succeeding to the throne, must have been tolerably far advanced in years.

---

* In the chronologicel table in Arch. Report, II, 448 the name Vira Varmma is by mistake printed, in lieu of Sandhira, as resting on the authority of the Dahi plate.

† Arch. Report, II, 455.

The supposition is allowable that the reign of Trailokya Varmma Deva ended in 1234 A. D., when Malik Nusratu-dín-Tábasí marched "against Kálinjar and Jamú." It is related that "the army marched on fifty days from Gwáliar, and great booty fell into its hands, so much that the imperial fifth amounted to nearly twenty-two lacs. When they returned from Kálinjar, they were encountered by this Rája of Ijári, who seized upon the defiles on the river Sindí in the road of the returning army."*

On this supposition Sandhira Varmma would have reigned from 1234 to about 1280 A. D., and he would have occupied the throne at Kálinjar, when Dalaki-wa-Malaki was defeated by Ulúgh Khán in 1248 A. D. Kalinjar does not seem to have been attacked by Ulúgh Khán in that year, nor in 1251, when it is only recorded that Ulúgh Khán marched "towards Kálinjar," and defeated Jáhir of Ijárí (*i. e.* Cháhada Deva of Narwar).

It will be observed that the date 1337 S. = 1280 A. D. of the inscription of Sandhira Varmma Chandel is exactly the same as the date of the Kanungo's *sanad* which purports to be granted by Rájá Kírat Singh Jú Bhar. If the latter document be authentic, the Bhar was then in possession of Kálpí and Mahoba, and the Chandel prince's dominions cannot have extended far from the walls of Kálinjar.

If the legend which places Kírat Pal Rájá of Kálinjar in 1252 be correct, then Sandhira Varmma would appear to have been for a while expelled even from Kálinjar.

The power of the Chandel house must have been greatly weakened by the severe defeats in 1182 and 1202, but the ancient dynasty seems to have in general kept hold of Kálinjar and to have at times recovered Mahoba. The famous princess Dúrgávatí, who married Rájá Dalpat Sá of Garha Mandla in about the year 1545 A. D. and was killed in battle in 1564, is recorded to have been the daughter of the Chandel Rájá of Mahoba. This Rájá is probably to be identified with Kírat Rai the Rájá of Kálinjar who was killed when Sher Sháh besieged his fort in 1545.

The victories of the Musalmán emperors and of their generals in no wise interfered with the succession of the local Rájás, who were simply forced from time to time to pay tribute and acknowledge the suzerainty of the Delhi crown.

---

* Tabakát-i-Násiri in Dowson's Elliot, II, 368. The mention of Jamú in this account is puzzling and would suggest that the Kálinjar meant is the fort on the borders of Kashmir; but, as the Rája of Ijári is identified with Cháhada Deva of Narwar, and the Sindí river is described as being on the road of the returning army, the Bundelkhand fort must apparently be meant; Jamú I do not understand.

Sandhira Varmma was probably immediately succeeded by Bhoja Varmma, but we know nothing of the names of the Chandel Rájás of Kálinjar between the time of Bhoja Varmma 1288 A. D. and that of Kírat Rai 1545 A. D., except that a person named Víra Varmma is mentioned in verse 22 of the much injured Kálinjar No. 2 inscription published by Maisay,* and he may have been a Chandel Rájá. This inscription appears to be undated, and I do not know why General Cunningham (Arch. Rep. II 448, Table) gives 1372 Samvat = 1315 A. D as its date.

Let us now return to the examination of the Mahoba tradition.

The Bhar Rájá, according to the tradition, was destroyed by a Musalmán attack, led by a saint named Malik Hasn Sháh, who had been sent by the king of Arabia. The story about the appeal of the oppressed Muhammadans to the Arabian prince may of course be dismissed as pure myth, but the saint appears to have been a solid fact, for his tomb and shrine exist to this day, and the guardians of the buildings say that they once possessed a quantity of ancient documents relating to the shrine and to Rájá Bhar, which have now unfortunately all disappeared.

I see no reason to doubt that the Bhar Ráj at Mahoba was actually destroyed by a Muhammadan attack, in which the holy saint Malik Hasn Sháh was the leading spirit.

The date of the Bhar chief's rise to power in Bundelkhand has been fixed approximately in the year 1240 A. D., and, although the Bhars suffered a severe defeat near Karra in 1248, they do not seem to have been finally crushed, and they probably retained a hold on Bundelkhand for many years.

I am disposed to think that Malik Hasn Sháh's raid was connected with Alá-ud-din's invasion of Málwa in the year 1293 A. D., respecting which Ferishta writes—"In the year 692, the king [Jalál-ud-dín] marched against the Hindus in the neighbourhood of Mando and, having devastated the country in that vicinity, returned to Dehli. In the meantime, Malik Alá-ud-dín, the king's nephew, governor of Karra, requested permission to attack the Hindus of Bhilsa, who infested his province. Having obtained leave, he marched in the same year to that place, which he subdued and, having pillaged the country, returned with much spoil, part of which was sent to the king."†

The direct road from Karra to Bhilsa, if it did not pass through Mahoba, must certainly have passed near that place, and it is probable that Mahoba was then included in the "infested" province of Karra, as it certainly was during the reign of Fírúz Tughlak in the middle of the following century.

* J. A. S. B. Vol. XVII, Part I, p. 319.

† Cf. C. Briggs' Ferishta, I, 303.

It is just possible that the Muhammadan attack on Mahoba may have taken place in 1295, the year that Alá-ud-dín returned to Karra from his daring expedition to the Dakhin, conducting his retreat "through extensive and powerful kingdoms; *viz.*, Málwa, Gondwára, and Kandeish;" but travelling thus, it is not likely that any part of his force would have come so far east as Mahoba.

The possible dates for the successful Musalmán attack on the Bhar leader are narrowly limited, on the one hand, by the date 1280 A. D. for Kírat Singh Bhar, and, on the other, by the date 1322 A. D. of Ghiás-ud-dín Tughlak's mosque at Mahoba, which is constructed of the materials of a Hindu or Jain temple and could not have been erected during the reign of a ruler hostile to Islám, as tradition affirms the Bhar chieftain to have been.

On the whole, the assumption of the date 1293 A. D. as that of the extinction of the Bhar Ráj at Mahoba, best accords with all the known facts. I therefore believe that the rule of the Bhars at Mahoba lasted from about 1240 A. D. till 1293 A. D.

Then, says the Mahoba tradition, the emperor of Dehli became sovereign of the country, and made over Mahoba to the Khangár rulers of Gaṛh Kurár.

The emperor referred to I believe to be Alá-ud-dín, who ascended the throne in 1295, and whose general Ain-ul-Mulk Multání reduced Málwa in 1304. *Alá-ud-dín, when holding Karrá and Málwa, must have had control over the intervening territories of Mahoba and Gaṛh Kurár.

I therefore conjecture that the Khangárs assumed charge of Mahoba not later than the year 1305 A. D., but they may have assumed charge in 1293 or 1295. The exact duration of their rule is not certainly known, but the Mahoba tradition affirms that it was ended by the treachery of Arjun Pál Gaharwár in the year 1400 S. = 1343 A. D.

This date has probably been remembered as a round number only, and may not be quite accurate, but I believe it to be approximately correct.

All accounts agree in tracing the Bundela genealogy back to a Gaharwár ancestor, although different traditions vary much as to the name of that ancestor and in other particulars.

By reckoning back the Bundela generations from a known date we can obtain an approximate date for the expulsion of the Khangárs by which to test the Mahoba traditional date.

The great Bundela chief, Rájá Chhatarsál, died in the winter of 1731 A. D.,† and he was (including Rudra Partáp) either the sixth or the seventh in descent from Rudra Partáp of Orchha,* and, according to two genealogies eight generations intervened between Sahanpál and Rudra Partáp, Sahanpál being named in some traditions as the destroyer of the Khangárs, in lieu of Arjun Pál.† We thus find either 15 or 16 generations from the death of Chhatarsál to the accession of Sahanpál, and, if a generation be taken as averaging either 20 or 25 years, the following limiting dates are obtained:—

---

* Briggs' Ferishta, I, 361.

† Captain Maitland, Political Agent at Charkhári, informs me that the exact date of Chhatarsál's death was Pús Badi 3 Samvat, 1788.

A. D.
15 × 20 = 300. (1731 — 300) = 1431.
15 × 25 = 375. (1731 — 375) = 1356.
16 × 20 = 320. (1731 — 320) = 1411.
16 × 25 = 400. (1731 — 400) = 1331.

The required date is thus fixed as lying between 1331 and 1431, and most probably lies between 1330 and 1340, a result which well accords with the Mahoba tradition.

I therefore conclude that Mahoba was governed, as a dependency, by the Khangárs of Gaṛh Kurár, subject to the lordship of the emperor of Dehli, from about 1300 to about 1340 A. D.

It is not known whether the early Bundela (Gaharwár) successors of Sahanpál exercised any authority over Mahoba or not, but it is probable that they did not, for, in or about 1337 A. D., Mahoba, with Karra and Dalamau, was in charge of Malik-us-Shark Mardán Daulat, who received the title of Nasír-ul-Mulk.

The process by which Gaharwárs became Bundelas is not clearly known, and in the genealogies the new clan name is accounted for by foolish myths.

The Bundelas are admitted to be of impure Rájput descent, and I think it most probable that they are the offspring of a marriage between the daughter of the Khangár Rájá of Gaṛh Kurár and the Gaharwár adventurer who supplanted him.

The fact of such a marriage seems to be indicated by the story given in the Hadíkatu-l-Akálim,‡ and in the variant of that story which I heard from Munshí Gya Dín Tahsildar, a member of a Kanúngo family long settled in Bundelkhand.

---

* According to the Gazetteer *s. v.* Orchha, that town was founded by Rudra Partáp or his son in 1531 A. D. One of my genealogies gives the date as 1511 A. D., and the same M. S. dates the expulsion of the Khangárs by Sahanpál in 1313 S. = 1265 A. D., which date is too early. In Chhatarsál's pedigree some genealogies insert the name of Kulnandan between Bhagwant and Champat Rai, and some omit it.

† One genealogy makes Sahanpál to be the son of Arjun Pál, another states that they were brothers, the former ruling at Kurár, and the latter at Mahauní.

‡ Quoted in Beames' Elliot, I, 45.

In his version of the story Pancham Singh is the Gaharwár hero, and becomes servant of the Khangár Rájá Kunḍarra, who takes him into favour, but ultimately insults him by asking for his own son the hand of the Rájput's daughter. Pancham pretends to consent to the union, but with the help of two Dhundhera Thákurs, named Punya Pál and Dhundpál, he concerts a plot to murder the Rájá while the latter is intoxicated at a festival.

The plot is executed, and Sánpál son of Pancham is installed as Rajá.

The different versions of the story vary so much that no belief can be given to the details of any, but the matrimonial alliance between the Gaharwár and the Khangár is in itself a highly probable incident for those times, and readily explains the low position among Rájputs occupied by the Bundelas.

I cannot suggest any rational derivation of the word Bundela, which is certainly not derived from *bandi* a slave-girl, as Sir H. Elliot was willing to believe.

The following chronological table summarizes the conclusions at which I have arrived concerning the outlines of the history of Mahoba and some other parts of Bundelkhand during the period between the defeat of the Chandels in 1182 A. D. and the rise of the Bundelas.

Chronological Table 1182—1352.

Event.	Date.		Reference.
	Hijri or Samvat.	Date.	
Defeat of Parmál by Prithiraj,	1239 S.	1182	Unpublished inscription of Prithiráj. (Cunn.)
Capture of Kálinjar, Kálpí and of Mahoba "capital of the principality of Kálpí," by Kutb-uddín Aibak,	599 H.	1202	Farishta and Táj-ul-Maásir.
Death at Kálinjar of Rája Parmál Chandel,	....	....	Táj-ul-Maásir.
Accession at Kálinjar of Rája Trailokya Varmma Chandel,	....	....	Dahi copper-plate.
Mahoba held successively by Taur Súba, the Mewátís and the Gonḍs.	....	circa 1203 to 1239	Mahoba tradition.
Capture of Gwáliar and defeat of Parihár Rája by Altamish,	630 H.	1232	Ferishta and Táj-ul-Maásir.
Accession at Kálinjar of Sandhira Varmma Chandel,	1291 S.	circa 1234	Conjecture and Dahi copper-plate.
Defeat of Chahada Deva of Narwar,	632 H.	1234	Tabaqát-i-Násiri.

Chronological Table 1182—1352—*Continued.*

Event.	Date.		Reference.
	Hijri or Samvat.	Date.	
Occupation of Mahoba by a Bhar chief, ..	....	circa 1240	Tradition and conjecture.
Occupation of Mauza Bharwára in Panwári by Lodhis during reign of Rája Bhar of Mahoba,	1300 S.	1243	Local tradition.
Occupation of villages on bank of Dasán river by Parihárs from Gwáliar,	1303 S.	1246	Local tradition.
Kírat Pál Rája at Kálinjar,	1309 S.	1252	Mahoba tradition.
Foundation of shrine of Pír Mobárik Sháh at Mahoba,	....	....	Ditto.
Defeat of Dalaki-Malaki between Karra and Kálinjar by Ulúgh Khán,	645 H.	1248	Farishta and Tabaqát-i-Násiri.
Ulúgh Khán 'marches towards' Kálinjar,..	....	1251	Tabaqát-i-Násiri.
Rája Sandhira Varmma Chandel makes a grant of land,	1337 S.	1280	Dahi copper-plate.
Rája Kírat Singh Bhar makes at Kálpi a grant of land in Mahoba,	....	....	Copy of *sanad* belonging to Kanungo of Mahoba.
Rája Bhoja Varmma Chandel, probably at Kálinjar,	1345 S.	1288	Jayadúrga inscription.
Nána Káyath his minister,	....	....	....
Ala-ud-din's expedition against the Hindus of Bhilsa,	692 H.	1293	Farishta.
Defeat of the Bhar Rája of Mahoba by Malik Hasn Shah,	....	ditto (?)	Local tradition.
Khangárs of Gaṛh Kurar appointed governors of Mahoba by Dehli court,	....	circa 1300	Local tradition.
Conquest of Málwa by Ain-ul-Mulk Multání,	704 H.	1304	Farishta.
Erection of mosque at Bhainsa Darwáza, Mahoba, in reign of Ghiyás-ud-din Tughlak,	722 H.	1322	Inscription on mosque.
Khangárs of Gaṛh Kurar and Mahoba overthrown by a Gaharwár adventurer, founder of Bundela clan,	1400 S.	circa 1340	Tradition.
Malik-us-Shark Nasír-ul-Mulk governor of Mahoba, Karra and Dalamau,	....	circa 1352	Tárikh-i-Mobárik Sháhí.

APPENDIX.

The following extracts from the Cawnpore Settlement Report bearing on the later history of the Chandels, and on their connection with the Gaharwárs of Kanauj came to my notice while these sheets were passing through the press. I am not aware of the existence of any other record of a Chandel principality with its capital at Kanauj.

1. The most important tribe in this district is that of the Chandels. I was fortunate enough to obtain two family histories (*Bansáwális*)—one, in Persian, belonging to the now extinct branch of Shiurájpur, the other, in Hindi, to the branch that, settling in Sachendi, covered the south of pargana Jájmau. The former was compiled before the mutiny from documents in his possession by order of the last Rájá, Sati Parshad, who, possibly conceiving he owed but little loyalty to a Government that had stripped him of his large estates, was induced to become a rebel, and though he escaped execution was thrown into prison, and after release died an absolute pauper in the house of Chaube Sidhári Lál, a rising landowner, to whom I am indebted for the loan of the history. The Hindi copy is the compilation of the family bards, and is full of mythical and exaggerated details, but is of value as corroborating the more precise record of the Persian document.

2. It would be foreign to the purpose of this report to relate the earlier history of the Chandels, which, as far as ascertained from these records, was printed in the "Indian Antiquary," February, 1873. I will take up the tale from the migration to Kanauj from Mahoba. On this the Persian manuscript says—"At the time of the Rájá of Kanauj, a Gahrwár, who till this time was rich and prosperous, first from the blows received at the hands of Rái Pithaura, and afterwards from the pressure of Shaháb-ud-din Ghori, left his home and established himself in Benares. Then Sabhájit by advice of his Wazírs settled in Kanauj." Finding the reputedly rich and wealthy Kanauj open to them, they probably left the sterile Bundelkhund for the fertile Duáb. The year of the migration is given by the Persian manuscripts as *sambat* 1223, by the Hindi one as 1180—a trifling discrepancy.

There were eight Rájás of Kanauj—

Sabhájit.
Gyás Deo.
Ghansyám Deo.
Bihr Deo.
Lahr Deo.
Súp Deo.
Bás Deo.
Khakh Deo.
Dham Deo.

Shiuráj Deo founded Shiurájpur, *Rájá.* From this branch descended the *Ráwat* of Onhá, pargana Shiuli.	Pat Deo founded Pachor, *Ráwat.* From this branch descended the *Rána* of Sakrej, pargana Shiuli.	Lag Deo founded Sapahi, *Ráo.* From this branch descended the *Ráwat* of Ráwatpur, pargana Bithúr.

3. From thence a migration was made to Rádhan, where are the remains of a large fort, and thence to Shiurájpur, of which settlement the Persian manuscript gives the following account:—

"Shiuráj Deo founded Shiurájpur and called it after his own name, so that from Kumaun to Karra (Manikpur) the whole country of Kanauj was in his possession. Since the rule of the Muhammadans had been established now for some time, all the Rájás and great men of the country attended the emperor's court, and amongst them Shiuráj Deo, regarding whom it was ordered that leaving Kanauj" (where he was probably too strong) "he was to reside in Tappa-Rádhan and Bilhat, in the pargana of Bithúr, where is 'Sita Rasoi.' Shiuráj accordingly obeying the emperor's order left the fort of Kanauj and, first building a fort in Rádhan, lived there; and afterwards founding Shiurájpur, he established his rule there. While he lived in Kanauj he had soldiers, horse and foot, numerous as the waves of the sea, so that to enumerate them is impossible. They say that when the Rájá went for a short time to Karra, horsemen carried to him the betel-leaf prepared for him daily in his home before the hour of midday meal."

4. The Gautams (*vide* Elliot's Glossary) are said to have bestowed on the Chandels the 62 villages which afterwards formed the Rájá's taluka under our settlements; but there is no mention of this source of the Chandel dynasty in either manuscript. It is most probable that like other tribes they were encouraged by grants of land from the emperor to expel the turbulent Meos.

5. Of the principal branches of the Chandel clan shown above, the Pachor branch is extinct, and the Sakrej branch practically so. The Onha

(Nonári Bahádurpur) taluka consisted originally of 34 villages, of which ten were held nánkár (a sanad of Alamgír bestowing title of Chaudhri of pargana Shiuli confirms this), but the privilege was resumed by Ilmás Ali, who left only ten villages in the possession of the family; these have now, owing to sales for arrears of revenue, dwindled down to six villages, which have only escaped, says Mr. Buck, on account of their lying in a tract of which the greater part of the cultivated area consisting of rice land was not recorded as cultivated in the village papers.

6. The Sapahi taluka consisted originally of 90 villages, of which 48 were separate with the title of Ráwat and formed the Ráwatpur taluka, of which Randhír Singh was the last representative; his estate being now in the hands of the Court of Wards for the benefit of a boy adopted by the widow of his son who died a week after his father. From Ráwatpur one descendant separated his share into the Kákádeo estate, consisting of 23 villages. This is as united a family as there is in the district, and their intelligence has been much sharpened by proximity to the courts. Randhír Singh over-reached himself by his cunning (*v. i.*), but the Kákádeo family have taken stricter precautions to keep the property undivided in the family, though partitions have commenced to disintegrate the once compact property. They fasten their coats on the left side (like Muhammadans), since they were let off some arrears of revenue by the emperor.

7. Of the villages remaining with the original family of Sapahi, 37 have gradually been taken up by other members of the family, two have been given "pún" to Bráhmans, three—Sapahi, Gangroli, and Kíratpur—are the only ones which remain attached to the *gaddi;* and in these even, under the English Government which gives every one his due, the ancestral custom, which retained the whole in the name of the representative of the family, has had to give way before the claims of all the descendants of Híra Singh to their shares calculated *per stirpes.* Hence the revenues of the original seat of the family Sapahi (and Kíratpur) are enjoyed by the cadet branch now represented by Shiudín Singh, those of Gangroli by the sons of the late Ráo Pahlwán Singh, of whom the eldest is a lunatic.

8. The original branches then possessed themselves of the old parganas Shiurájpur, Shíuli, Sakrej, and Bithúr. The branch that settled in Sachendi and overran all the south of pargana Jájmau may be considered but a renegade one. Of its origin the Persian manuscript gives curiously a clearer account than the Hindi manuscript, as follows:—

"They say that Harsingh Deo, son of Karkaj Deo, a brother of Karchand, who lived at Bihari (Pyari), on the bank of the Ganges, had a son, Hindu Singh, very strong and great, but infamous for his oppression of the rayats. At that time Rájá Indarjít hearing of this was grievously offended. One day that very man, passing through Lachhmanpur Misrán, got up a quarrel with the inhabitants, and began to oppress them greatly. The Bráhmans complained to the Rájá, and set forth all the oppression they had undergone. The Rájá becoming very angry wrote to him, ordering him to leave his home and seek another country, and warned him that to eat and drink in this country was forbidden him: it were better he went elsewhere. He then, with all his belongings, went and settled in Tappa Sapahi (*v. s.*), and became the servant of the Ráo of Sapahi. At that time fortune so favoured Hindú Singh that he rose to great power, and built forts in Behnor aud Sachendi, and established his rule over a large tract of country, and engaged thousands of soldiers, horse and foot, and obtained victories in many battles waged against him. His fame was noised abroad, and he assumed the title of Rájá of Sachendi." From the Hindi manuscript, however, of the family history of the Sachendi line, we obtain the following account of the rise of that family, which overran the whole of south Jájmau, and eventually got the territory under the old family temporarily in its grasp:—"The 35th was Gargaj Deo, who had two sons, Karchan Deo, hy a concubine, and Har Singh Deo, the sister's son of the Tilok Chand Bais. When Gargaj Deo died, Karchan Deo and Har Singh Deo disputed about the succession, hearing which Tilok Chand came to the Ráni and desired she would give the ráj to Har Singh Deo. She refused and set Karchan Deo upon the *gaddi*. Har Singh Deo left Shiurájpur, came to Behnor and founded Harsinghpur and a second *gaddi*." The truth appears to be more with the latter account, Hindú Singh being a descendant, some generations distant of Har Singh Deo, and living in the reigns of Indarjít aud Hindupat (cotemporary of Firoz Sháh), to which Rájás, says the manuscript, "Hindú Singh, in spite of his power, never failed in respect, nor committed so grave an offence as that of his son Sambhar Singh." Hindú Singh's power indeed became so great, and his contumacy so determined, that the reigning emperor got the Bhadauria Rájá to attack him and expel him the country; the great forts of Dinaur, Sachendi, &c. being given over to the Bhadaurias. Sambhar Singh, however, returned eighteen years after and recovered the whole of the lost territory. This same Sambhar Singh rose to such power that he ousted the young Risál Singh (who had to fly the country), and obtained title-deeds to the greater part of the country, and established a "thána in Shiurájpur." With the aid, however, of Nawáb Najaf Khán, Názim of Nawáb Wazír-ul-Mamálik Asf-ud-Daulah, he (Risál Singh) re-established his authority over the whole pargana of Shiurájpur.

9. Sanad of Jalál-ud-din Akbár to Rájá Rámchand. "Since it has been brought to our notice that from time of old, according to immemorial custom, Rs. 15,000 for support, and one 'tinka' per cultivated bigha by

right of seigniory from the villages of pargana Bithur, sirkár Kanauj, by title of zemindári, have been received by my good friend Rámchandra Chandel, and that he is in possession and full enjoyment of that grant and fees; he has petitioned our majesty that an order be passed that the abovementioned grant and fees, by title of zemindári from the villages abovementioned, according to former custom, be continued in his possession and enjoyment from rabi, that from year to year, and from harvest to harvest, he may enjoy and possess them; and being a true and loyal servant, may for ever pray for our greatness and prosperity. Be it ordered, therefore, that all officers and servants, Jagir-darán and Crorian, now and for ever, obeying this order, and accepting those rights as free, complete, and fixed, leave them in his possession, nor change nor alter in any respect, nor interfere in any way, nor demand a fresh title."

*95 villages.**

Rádhan ...	74 villages.	Bharbedi ...	6 villages.
Bilhat ...	12 ,,	Haveli ...	18 ,,
Phalphandi ...	7 ,,	Barua ...	8 ,,

10. Sachendi, properly Chachendi, was founded by Chácbak Deo, twelfth in descent from Har Singh Deo and the first to assume the title of Rájá, though not invested with the tilak. His brother Kinnar Singh founded Binaur; a second brother, Garab Deo, settled in Garab (pargana Bithúr); a third, Parasrám, in Perajor (pargana Akbarpur). Hindú Singh was sixth in descent from Cháchak Deo; his brother Jográj settled in Binaur, and Hirde Singh in Panki—all three taking the title of Rájá. The Rájás of Sachendi and Binaur joined the rebels, and their estates were confiscated and bestowed on loyal subjects. The Rájá of Panki has kept possession of only half his ancestral estate, and that half is almost hopelessly burthened with debt, but has been put under the charge of the Court of Wards with the hope of freeing it from the grasp of the money-lender.

11. Thus of the once vast possessions of the Chandels, covering nearly four parganas, Shiurájpur, Shiuli, Bithúr, and Jájmau, only 125 villages remain entire (and some of these have been re-purchased) and shares in others.

12. I defer till the fiscal history the account of the fate of the Shiurájpur talúqa.

13. This tribe has its locale in the southern portion of pargana Bilhaur; the account given of their immigration in the southern portion of the pargana is as follows: After the flight of Mánik Chand, younger

---

* Of the above only Rádhan and Barua are names of villages; the remainder are local definitions of areas now extinct.

brother of Jaichand of Kanauj, Thákur Rahtor (though the family history calls him Gahrwár),* on the victory of Shaháb-ud-din Ghori, and Mánik Chand's own defeat at Karra Mánikpur, his sons made their way to the Vindhyá mountains near Mirzapur, whence one son settled in Orcha, and the youngest returned to Aurangpur Sámbhi, and ousting the Ujena Thákurs, who were in possession, established a ráj at Sengh, to which were attached 28 villages (seven across the Ganges), and a cadet branch with the title of Ráo at Madára Rái, with 17 other villages. During the oppressions of the Oudh rule the latter branch became extinct, and only 9 villages remained in the hands of the Sengh Rájá. Owing to the lunacy of the Rájá Bhawáni Singh (who was an adopted heir from that branch of the family which had settled across the Ganges), which threw the estate into the power of his two widows (profligate women), even these have been in danger of transfer, but the estate is now in charge of the Court of Wards, and may be saved for the young occupant of the "gaddi," Takht Singh.†

A New Find of Early Muhammadan Coins of Bengal.—By A. F. Rudolf Hoernle, Ph. D.

(With four Plates.)

In 1863 an unusually large hoard of silver coins, numbering in all no less than 13,500 pieces, was found in the State of Kooch Behár in Northern Bengal.‡ About 10 years later another, much smaller hoard was found in or near the Fort of Bihár, containing only 37 pieces.§ Both hoards consisted of coins of almost exclusively Bengal mints, only a very small number belonging to the imperial mints of the Dehli Sultáns.[*] The coins of the large hoard embraced a period of some 107 years, reaching up as high as about A. H. 634 (= A. D. 1236). Those of the smaller hoard extended over a term of 13 years and went back as far as the year 614 A. H. (=1216 A. D.); thus bringing us to an interval of only 14 years from the first occupation of Bengal by the Muhammadans, which took place in 600 A. H. (=A. D. 1203) under Muhammad Bakhtiyár Khaljí.

---

* For an attempted solution of the relation of Gahrwárs to Rahtors I refer to Elliott's Supplementary Glossary. The fanciful derivation given to the name here is "out of house and home" (ghar báhar), referring to the flight of the tribe after the destruction of Kanauj.

† From Mr. F. N. Wright's Report on the Revision of the Settlement of the Cawnpore District, pp. 18—22.

‡ See Report (with list of coins) by Dr. R. Mitra in J. A. S. B. vol. XXXIII, pp. 480—483. Also E. Thomas' *Initial Coinage of Bengal*, in J. A. S. B., vol. XXXVI, p. 1.

§ See Journal A. S. B., vol. XLII, p. 343. The exact date of this find is not mentioned by Mr. Thomas.

Selecting the earliest specimens from among the coins of the two finds, Mr. E. Thomas described them in two papers, contributed to this Journal.[†] The substance of the first paper is also incorporated in his Chronicles of the Paṭhán Kings of Dehli, pp. 109 ff.[‡]

Quite recently, in the beginning of November 1880, a buried treasure was found by three land cultivators in some kheraj ground within the municipal limits of Gauhati (in Asam). The hoard consisted of 38 silver pieces and 40 small lumps of gold; but only 14 of the former and one of the latter were recovered by the Deputy Commissioner of Kámrúp, who, under the Treasure Trove Act, forwarded them to the Asiatic Society of Bengal. On examination by me they proved to be early Muhammadan coins, some of which bear the name of the provincial mint of Lakhanautí, while others do not mention their place of mintage at all. Among them were some which have not been hitherto described and published; one or two, I suspect, are altogether new.

They consist of—

4 coins	of the	Dehli Emperor Shams-ud-dín Altamsh.
1 coin	,,	Bengal Sulṭán Ghiyáṡ-ud-dín 'Iwaz.
2 coins	,,	Dehli Empress Riẓíah or Jalálat-ud-dín.
1 coin	,,	Dehli Emperor 'Alá-ud-dín Mas'aúd.
3 coins	,,	Dehli Emperor Náṣir-ud-dín Maḥmúd.
3 ,,	,,	Bengal Sulṭán Mughíṡ-ud-dín Yúzbak.

Before proceeding to describe these coins in detail, it will be useful to give a table of the Governors of Bengal and the contemporary Emperors of Dehli, indicating those rulers (in small italics) coins of whom have been already discovered and described by Mr. Thomas. This will show at a glance the additions (in capital italics), procured from the present find.

---

[*] Less than 150 in the large and 1 in the smaller hoard.

[†] See vol. XXXVI, 1867, pp. 1 ff. and vol. XLII of 1873, pp. 363 ff. The first paper had been originally printed in the Journal R. A. S. (N. S.), vol. II. of 1866, pp. 145 ff.

[‡] See also Blochmann's *Geography and History of Bengal*, in J. A. S. B., vol. XLII, pp. 245 ff. Also Dr. R. Mitra in J. A. S. B., vol. XXXIII, pp. 579, 580.

No.	ACCESSION.		Governors of Bengal.	Emperors of Dehli.
	A. H.	A. D.		
1	600	1203	Muḥammad Baḳhtiyár Khaljí.	Mu'iz-ud-dín Muḥammad bin Sám.
2	602	1205	'Izz-ud-dín Muḥammad	Quṭb-ud-dín Aibak.
3	605	1208	'Alá-ud-dín 'Ali Mardán,	
4	608	1211	*Sulṭán Ghiyáz-ud-dín. 'Iwaz,*	*Shams-ud-dín Altamsh.*
5	624	1226	Násir-ud-dín Maḥmúd,...	
6	627	1229	'Alá-ud-dín Jání, ...	
7	627	1229	Saif-ud-dín Aibak, ..	
8	631	1233	'Izz-ud-dín Ṭughril, ...	Shams-ud-dín Altamsh to 633. Rukn-uddín Feroz Sháh to 634. *Sulṭána Riẓiyah* to 637. Mu'iz-ud-dín Bahrám Sháh 639. *'ALÁ-UD-DÍN MAS'AÚD SHÁH.*
9	642	1244	Qamar-ud-dín Timur Khán	'Alá-ud-dín Mas'aúd Sháh.
10	644	1246	*SULṬÁN MUGHÍS̤-UD-DÍN YÚZBAḲ.*	*Náṣir-ud-dín Maḥmúd.*
11	656	1258	Jalál-ud-dín Mas'aúd,...	Náṣir-ud-dín Maḥmúd.
12	657	1258	'Izz-ud-dín Balban, ...	
13	657	1258	Táj-ud-dín Arslán Ḳhán,	
14	659	1260	Muḥammad Arslán Ḳhán	

I. Coins of Shams-ud-dín Altamsh.

No. 1. (Plate I, No. 1). *Silver.* Weight 164½ grs. Apparently *new* in this variety. It closely resembles Nos. 1 and 3 in Thomas' *Initial Coinage of Bengal*, Pt. II, pp. 350, 353; but the legend on the obverse is differently arranged.

Obv.	*Rev.*
السلطان	
المعظم شمس الد	Horseman
نيا و الدين ابو المظفر	(with club in right hand).
التمش القطبي ناصر	
امير المومنين	*Margin :* illegible.

The marginal legend is complete, but in illegible scrawls, exactly resembling those in No. 3*a* of Thomas' *Initial Coinage*, Pt. II, p. 353. The date, to judge from other coins of this type, would be some year between 614 and 616. No mint place is mentioned.

No. 2. (Plate I, 2). *Silver.* Like No. 1 in every respect; but the marginal legend is incomplete.

No. 3. (Plate I, 3). *Silver.* Weight 165 grs. Date 6[26]. Exactly like the coin No. XXVIII, described and figured by Mr. Thomas, in his *Chronicles of the Paṭhán Kings of Dehli*, p. 46, and noted as "very rare."

Obv.	*Rev.*
لا اله الا الله	فی عهد الامام
محمد رسول الله	المستنصر امیر
	المومنین
	Margin : ضرب هذا ...... مایة

Nothing of the margin is left in Mr. Thomas' coin; the small portion (مایة) still visible here clearly belongs to ستمایة *sittamáyat* = 600. Mr. Thomas gives reasons for his conjecture that the date must be 626 A. H. It may be noted that the four segments, formed by the square within the circle, contain, on the obverse, an ornamental scroll, on the reverse, three dots.

No. 4. (Plate I, 4). *Silver.* Weight 167½ grs. Date [6]30. Exactly like the coin, No. XXX, described and figured by Mr. Thomas, *Chronicles*, p. 52. Only one-half of the date is left (30), but it suffices to fix the date as 630. The illegible space of the margin is just sufficient to provide room for the two words ضرب at the beginning and ستمایه at the end. The coin, therefore, bears no name of any mint.

Obv.	*Rev.*
السلطان الاعظم	لا لله الا الله
شمس الدنیا و الدین	محمد رسول الله
ابو المظفر التمش	المستنصر بامرالله
السلطان ناصر امیر المو	امیرالمومنین
[منین]	*Margin :* هذا السکه فی شهور ....
The syllables منین are contained in the right-hand-side segment.	سنة ثلثین ....

II. COINS OF GHIYÁṢ-UD-DÍN 'IWAẒ.

No. 5. (Plate I, 5). *Silver.* Weight 165 grs. *Unique* in this variety. Date: *sixth month of* 621.

The legend on the obverse is much like that on coin No. 7*a* in Mr. Thomas' *Initial Coinage of Bengal*, Pt. II, p. 357 (J. A. S. B. vol. XLII); but the last phrase of that legend is omitted here, and the words are differently arranged. On the reverse, the legend is as on his No. 6*a* (*ibidem*, p. 356), but with a different date. The letters, especially on the obverse, are excessively badly formed. The two first numerals of the date are very much worn, but sufficient is distinguishable, to determine the date as 621. It cannot be later than 622, as Khalif Náṣir-ud-dín died in that year; nor can it be a date in the second decade of the 7th century, because the second numeral is clearly عشرين (not عشر or عشرة), and because the similar coins Nos. 7 and 7*a* of Thomas are of 620. No mint is named; but of course it must be some Bengal mint, as Ghiyáṣ-ud-dín was ruler of Bengal.

Obv.	*Rev.*
غياث الدنيا و الدين	لا اله الا الله
ابو الفتح عوض بن الحسن	محمد رسول الله
قسيم امير المومنين سلطان	الناصر لدين الله
السلاطين معز الدنيا و الدين	امير المومنين
ابو المظفر علي يد ناصر	*Margin:* ضرب هذه السكه فی جمادی
امير المومنين	الاخرة سنة احدی و عشرين و ستمايه

III. COINS OF JALÁLAT-UD-DÍN (RIẒIYAH.)

No. 6. (Plate I, 6). *Silver.* Weight 166 grs. Mint *Laknautí.* Date [634].

This coin agrees in every respect with the coin No. 90 in Thomas' *Chronicles*, p. 107, and No. 2 in his *Initial Coinage*, Pt. I, p. 39. The agreement even extends to the imperfect marginal legend. It is to be noted, however, that in the present coin the word ابنت "daughter" is placed between التمش and السلطان. The date unfortunately was on the lost portion of the margin.*

Obv.	*Rev.*
السلطان الاعظم	فی عهد الامام
جلالة الدُنيا و الدين	المستنصر امير
ملكه التمش ابنت السلطان	المومنين
مهرة امير المُومنين	
No margin.	*Margin:* ... هذا الفضه بلكنوتی ....

---

* The date of this coin is 634, as shown by a duplicate in the Society's Cabinet; see below No. 24, p. 67.

No. 7. (Plate II, 7). *Silver.* Weight 159 grs. Mint [Laknautí]. Date 635 [*]

This is a variety of the former (No. 6); the legend on the obverse being in a slightly different arrangement. The word ابنت is again distinctly placed between *Altamsh* and *us Sulṭán.* The name of the mint town, omitted in the imperfect marginal legend, should be *Laknautí.*[†]

Obv.	*Rev.*
السلطان الاعظم	فی عهد الامام
جلالة الدنيا و الدين	المستنصر امير
ملكه التمش ابنت	المومنين
السلطان مهرة امير	*Margin:* ضرب هذا الفضه
المومنين	ستمايه ثلثين خمس.. .. ..
No margin.	

IV. Coin of 'Alá-ud-dín Mas'áúd Sháh.

No. 8. (Plate II, 8). *Silver.* Weight 163 grs. *Unique.*[‡]

This coin is peculiar in that it has no marginal inscription indicating, as usual, the place of mintage and the date. Nor does it appear from its present state, that it ever had any marginal circle. The whole face of the coin, on both sides, is covered by a double-lined square area, with four external segments, formed by the circumference of the coin, and containing an ornamental scroll on the obverse, and three dots on the reverse (as on coin No. 3). The inscription on the reverse is peculiar in adding بالله *b'illah* to the Khalif's name and لله at the end of the whole legend, and on the obverse, in omitting the article ال *al* before سلطان *sulṭán.* In the peculiarities of its outward arrangement, as well as in those of its inscriptions, this coin is an exact likeness of the coins of Náṣir-ud-dín, No. 9 and its duplicate. Indeed, as regards the reverse, the two coins, Nos. 8 and 9, are almost duplicates, even as regards the heavy, square form of the letters. On the obverse, the legends are alike, barring only the ruler's name; but while 'Alá-ud-dín's coin, No. 8, shows the same kind of heavy square letters as on the reverse, that of Náṣir-ud-dín, No. 9, shows the light, oblong kind of letters, which re-appear on his coin, No. 10, and still more strikingly on Mughiṣ-ud-dín's coins (Nos. XI, XII).

---

[*] This is now in the possession of the Hon'ble Mr. J. Gibbs, by exchange.

[†] This is shown by a duplicate of a variety of this coin in the Society's Cabinet; see below No. 26, page 67.

[‡] I know only two other specimens which resemble this coin, and which I discovered afterwards, see Nos. 27, 28, page 68.

Obv.	*Rev.*
السلطان الاعظم	فى عهد الامام
علا الدنيا و الدين ابو	المستنصر بالله امير
المظفر مسعود شاه	المومنين لله
بن سلطان	
No margin.	*No margin.*

No place of mintage is named; hence it may be assumed to have been the imperial mint of Dehli. Nor is any date given; but as the Khalif Al Mustanṣir died in the middle of 640 A. H., and 'Alá-ud-dín ascended the throne in 639, it would seem to be limited to one of those two years. (See Thomas' *Chronicles*, pp. 120, 122). But see below, p. 64.

The execution of the inscriptions is not good. That on the obverse is so crowded, as to necessitate the inserting of the two words شاه and سلطان, interlinearly, between the second and third lines. Moreover the consonant س is never written, unless it be indicated by an almost imperceptible straight line; thus we have اللطان, لطان, معود on the obverse and المتنصر on the reverse.

V. Coins of Náṣir-ud-dín Maḥmúd Sháh.

No. 9. (Plate II, 9). *Silver.* Weight 164 grs. Date [644 ?]

Of this coin, there are two duplicate specimens in the lot,* which are in every respect the counterparts of coin No. 60 in Thomas' *Chronicles*, p. 81, *Initial Coinage*, Pt. I, p. 35 (J. A. S. B., vol. XXXVI) and Pt. II, p. 363 (J. A. S. B., vol. XLII), where it is noted as "unique." According to Mr. Thomas, the margin is "illegible."† But from the present coins it is quite clear, that there is no circular margin at all; the angles of the square areas touch the circumference of the coin, and form with it four segments, containing scrolls on the obverse, and three dots on the reverse. In fact, they are in this respect exact reproductions of 'Alá-ud-dín's coin, No. 8.‡ No mint is named, nor any date. The former is probably Dehli and the latter 644, as will be shown afterwards (see below, p. 64).

---

* The duplicate is now in Mr. Gibb's possession, by exchange.

† In his last reference, however, (*Initial Coinage*, Pt. II, p. 363) no mention is made of any margin at all.

‡ It is noteworthy that Marsden in his *Oriental Coins* (Pl. XXXV, No. DCXCIV) figures a very similar coin of Náṣir-ud-dín, which also is devoid of marginal circles, and indicates no mint or date. But the inscriptions are somewhat different, omitting شاه on the obverse, and reading المستعصم امير المومنين on the reverse. Unless, indeed, the margins should be worn away, as Mr. Thomas (*Chronicles*, p. 126) seems to suppose; but of such wear there appears to be no evidence.

Obv.	*Rev.*
السُلطَان الاعْظم	في عهْدِ الامَام
ناصرُ الدُنيا وَ الدين	المُستنصرَ بالله امير
ابُو المُظفر محمُود	المُوْمِنين لله
شاه بن سلطَان	
No margin.	*No margin.*

No. 10. (Plate II, 10). *Silver.* Weight 169 grs. Mint *Laknautí.* Date [645]. *Unique.*

The obverse of this coin is an almost exact reproduction of the obverse of No. 9, with the exception only, that the four segments contain words instead of scrolls; *viz.*, above ضرب, on the left هذه; below بلاد (?), on the right هند. The reverse differs from that of No. 9 altogether, but, on the other hand, it is apparently an exact reproduction of that of coin No. 110 in Thomas' *Chronicles*, p. 129, with the exception of the date, which is probably 645. The date is almost wholly wanting; there is however room for three numerals, and the traces left of the first numeral best agree with خمس *five;* and considering that this coin shares the peculiarity of the reading *Maḥmúd Sháhu-bnu-Sulṭán* with No. 9, the date in all probability is 645. For in his later coins of 652, 654, 655 Náṣir-ud-dín always describes himself as *Maḥmúdu-bn-us-Sulṭán.*

It may be noted that the inscription on the obverse of Mr. Thomas' No 110 is the same as on the obverse of the present coin, with the exception of the omission of شاه after Maḥmúd and the addition of the article ال *al* before سلطان and of a few almost illegible words at the end. Among the latter, however, in the left hand corner, the word یوزبک *yúzbak* is quite distinct, written precisely as in the coins of Mughíṣ-ud-dín, Nos. 11 and 12. The mention of the name Yúzbak fixes the date of the coin as being during the governorship of Ikhtiyár-ud-dín, before he assumed independence under the title Sulṭán Mughíṣ-ud-dín. The coins Nos. 11 and 12 show that he was already independent in 653; hence the date must be either 651 or 652; probably the latter.*

---

* According to Mr. Thomas' transcript, one numeral is omitted before 5 and one after. The latter, of course, is 6 (= 600); the former must be 1 or 2.—This coin was, at first, thought to be lost, but I found it afterwards in the Society's Cabinet, and it is described below, see No. 29, pp. 68, 69.

Obv.	*Rev.*
ضرب السلطان الاعظم ناصر الدنيا و الدين ابو المظفر محمود شاه بن سلطان هذه … فضه بلاد	فی عهد الامام المستعصم امیر المومنین *Margin* ... ب هذه السكه بلكنوتی سنة خمس ....

VI. COINS OF MUGHÍṢ-UD-DÍN YÚZBAK.*

No. 11. (Plate II, 11). *Silver.* Weight 171 grs. Mint *Laknautí.* Date, *month Ramazán* 653 A. H. *New.* This money is said to be derived from the land revenue of *Badan and Nawadiyá*† (Bardwán ? and Nadiyá).

This coin, in the arrangement of the surfaces and in the style of execution of the letters,‡ very closely resembles Náṣir-ud-dín's coin, No. 10. As regards the obverse, this resemblance is even closer to Náṣir-ud-dín's coin, No. 9, in one point; *viz.*, in resuming the scroll (instead of the words) in the segments. There can be no doubt, that Mughíṣ-ud-dín, when he made himself independent of Náṣir-ud-dín, imitated his coins, as nearly as possible.

Obv.	*Rev.*
السلطان الاعظم مغیث الدنیا و الدین ابو المظفر یوزبک السلطان	فی عهد الامام المستعصم امیر المومنین
No margin.	*Margin* هذا الضرب بلكنوتي من خراج ارض بدن و نودیا فی رمضان سنة ثلث و خمسین و ستمایه

No. 12. (Plate II, 12). *Silver.* Weight 171 grs. Mint *Laknautí.* Date 653 A. H. Duplicate of No. 11.

---

* Regarding the history of this ruler, see Major Raverty's translation of the *Ṭabaqát i Náṣirí*, pp. 761 ff.

† Spelled *Núdiyah* in the Ṭabaqát i Náṣirí. See Blochmann, *Geography and History of Bengal*, in J. A. S. B., Vol. XLII, p. 212.

‡ The coins of Mughíṣ-ud-dín are particularly graceful, with their light, oblong letters and the little ornamental scrolls to fill up the vacant spaces of the square areas

There are two points, especially, on which the coins of this new Find throw light, *viz.*, the dates of Náṣir-ud-dín and those of Mughíṣ-ud-dín.

1. From a comparison of the dates of these coins, it will be seen that they embrace a period of about 40 years, *i. e.*, from A. H. 614 to 653 ; *viz.* :

Sulṭan	Altamsh before Ghiyáṣ' revolt,	2	coins,	A. H.	614 or 616.
„	Ghiyáṣ-ud-dín of Bengal,	1	„	„	621.
„	Altamsh after Ghiyáṣ' revolt,	2	„	„	626, 630.
„	Jalálat-ud-dín (Riẓiyah),	2	„	„	634, 635.
„	'Alá-ud-dín,	1	„	„	640.
„	Náṣir-ud-dín,	3	„	„	644, 645.
„	Mughíṣ-ud-dín of Bengal,	3	„	„	653.

For all practical purposes, these dates are certain, except that of the two undated coins of Náṣir-ud-dín (No. 9 and its duplicate), which I have put down to the year 644.

There were two brothers of the name of Náṣir-ud-dín, sons of Sulṭán Altamsh. The elder was Governor of Bengal for a short time ; viz., two years, A. H. 624-626.* The younger, born A. H. 626 (the year of the death of his namesake brother), was Emperor of Dehli, after 'Alá-ud-dín Mas'aúd Sháh, for 20 years, A. H. 644-664. During his reign the Bengal Governor Ikhtiyár-ud-dín Ṭughril Khán revolted and made himself independent under the title of Sulṭán Mughíṣ-ud-dín.

It is quite certain that the coin No. 10 belongs to the younger Náṣir-ud-dín. For firstly, the Khalif Musta'ṣim, mentioned on it, succeeded in A. H. 640, while his predecessor Mustanṣir was Khalif during the two years of the elder Náṣir-ud-dín's governorship of Bengal. Secondly, there is the striking resemblance between this coin and those of Sulṭán Mughíṣ-ud-dín, who was a contemporary of the younger Náṣir-ud-dín, and who clearly imitated the latter's coins.

The case is very much more doubtful, as regards the other coins of Náṣir-ud-dín (No. 9 and its duplicate). Mr. Thomas (*Chronicles*, pp. 82, 83, *Initial Coinage*, Pt. II, pp. 360 ff.) considers that the type of coin, to which they belong, must be ascribed to the elder Náṣir-ud-dín. It is with some diffidence that I venture to differ from so great an authority on Numismatics ; but I am inclined to ascribe these coins to the younger. My reasons are the following :

In the first place, the present coins clearly show that the Bengal Governors never struck coins in their own name, except when they had revolted and established an independent Salṭanat. Thus all the present coins bear the names of Dehli Emperors, except those of Ghiyáṣ-ud-dín and

---

* See Major Raverty's Translation of the Ṭabaqát i Náṣirí, pp. 594, 629 ff. Also E. Thomas, *Initial Coinage*, Pt. II, p. 35, Pt. II, p. 350, *Chronicles*, p. 82.

Mughíṣ-ud-dín, who, for a certain time, had made themselves independent. During that time, they replaced the Emperor's name with their own; but while they were mere Governors, they did not venture to interfere with the Emperor's superscription. Thus Ghiyáṣ-ud-dín's name does not appear on the coins before or after his revolt, but that of the Sulṭán Altamsh. Similarly Mughíṣ-ud-dín's name does not appear on No. 10, which was struck before his revolt, but Náṣir-ud-dín's. The utmost a Governor might venture to do was to place his own name as an appendix to that of his Emperor; as shown in No. 110 in *Chronicles,* p. 129, where Ikhtiyár-ud-dín Yúzbak (*i. e.,* Mughíṣ-ud-dín) adds his name after that of his Emperor Náṣir-ud-dín; in this case, indeed, there was a special reason for it; for, as the date of the coin shows, Yúzbak was at that time already on the eve of his revolt (see below, page 65) and the conjunction of his own name with that of the Emperor was the first step towards it. Again though 'Izz-ud-dín Ṭughril was the Governor of Bengal during the time when a woman, Riẓiyah, sat on the imperial throne, yet his name does not appear on the contemporary coins, but that of the Empress Jalálat-ud-dín. It is clear, therefore, that the coins, which were struck during the Bengal Governorship of the elder Náṣir-ud-dín, could not have borne the latter's name, but that of his father Altamsh, who was the Emperor of that time.

But in addition to this inferential proof, there is direct evidence of the fact. Mr. Thomas, *Initial Coinage,* Pt. II, pp. 360, 361 (Plate X, Nos. 7 and 8) describes and figures two coins, struck at Laknautí,* in the year 624, that is, in the year when the elder Náṣir-ud-dín was already Governor of Bengal; but both coins do not bear his name, but, as usual, that of the contemporary Emperor Altamsh. It is clear, therefore, that the Náṣir-ud-dín, who describes himself as "Sulṭán" and puts his name on the coins under discussion, cannot have been a mere Governor of Bengal, but must have been an Emperor of Dehli. Whence it follows, that he must be the younger Náṣir-ud-dín; for he alone of the two namesakes ever was Emperor.

In the second place, when describing the coins, I have shown (see p. 59) that Náṣir-ud-dín's coin, No. 9, is a close imitation (barring the ruler's name, of course) of 'Alá-ud-dín's coin, No. 8, and also (through No. 10) a more or less close prototype of Mughíṣ-ud-dín's coins, Nos. 11 and 12. This fact accurately fixes Náṣir-ud-dín's position between 'Alá-ud-dín and Mughíṣ-ud-dín (that is, between 644 and 653) and proves him to be the Emperor of that name, but not the Governor of Bengal of that name, who died 18 years previously (626). Moreover, it should be remembered, that 'Alá-ud-dín's coin No. 8 and its antitype, Náṣir-ud-dín's No. 9, have some points quite peculiar to themselves; thus, the absence of any indication of mint-place and date, the omission of the article before Sulṭán, the addition of *illah.*[*] Now it is extremely improbable, that the Emperor 'Alá-ud-dín should appropriate, for one type of his coins, not only the general style, but also the peculiarities of a coin of a mere Governor of Bengal, and that, of a Governor who had died 13 years previously (for Náṣir-ud-dín, the Governor, died A. H. 626, while 'Alá-ud-dín became Emperor in 639). On the other hand, it is perfectly natural that the Emperor Náṣir-ud-dín should (temporarily) appropriate the style and peculiarities of the coins of his immediate predecessor 'Alá-ud-dín, whom he succeeded in 644. He probably very soon discarded the imitation. His coins, No. 10 of A. H. 645 (in the present lot), and No. 110 of 651, No. 106 of 654 (in *Chronicles*, pp. 127, 129) already show different styles, without the peculiarities of 'Alá-ud-dín's coin. We shall probably not go far wrong, if we assume that his coins of the style No. 9 belong to the very commencement of his reign and are to be ascribed to A. H. 644. This is further made probable by the fact that coin No. 9 shows an anachronism in preserving the name of the Khalif Al Mustanṣir b'illah, who had already died in 640. This would seem to show that 'Alá-ud-dín's coin was adopted by Náṣir-ud-dín in some haste, merely changing the imperial names, but leaving all the rest undisturbed; but as soon as his affairs had become settled, the needful change must have been made,[†] as shown, *e. g.*, in the very similar coins, noticed by Marsden, *Oriental Coins*, p. 523 (Plate XXV, No. DCXLIV). 'Alá-ud-dín's coin would lend itself all the more easily to this anachronism, since no date is mentioned on it. Indeed, judging from its peculiarities, I am inclined to think that the omission of the date was intentional, so as to allow of its being struck continously throughout the reign of 'Alá-ud-dín, up to 644, when Náṣir-ud-dín succeeded him. Which again would account for the fact of its being adopted so easily by the latter emperor. That it, however, was only adopted by him as a very temporary measure, is shown by his coin, No. 10, which (see page 60) in all probability was already struck in 645, and which preserves the reverse of his (temporary) coin, No. 9, but exchanges the anachronical name of Mustansir, for the correct Musta'ṣim.

---

* The imperfect word, in No. 7 on Pl. X, which Mr. Thomas reads as شهور, is probably بلکنوتي and the preceding lacuna is السكه.

In the third place, most of the arguments, which Mr. Thomas adduces for his belief that the coin belongs to the elder Náṣir-ud-dín, are taken from its peculiarities, which, he considers, point to an early period (see *Chronicles*, pp. 82-84). Much of the force of these arguments disappears, when it can be shown, from the present Find, that all those peculiarities occur in a coin of 'Alá-ud-dín, that is, at a date quite as late as the younger Náṣir-ud-dín. With regard to the peculiar phrase *bnu-Sulṭán (Chronicles*, p. 84), the case is even stronger; for the present Find shows, that it also occurs in No. 10, which is an undoubted coin of the younger Náṣir-ud-dín. Whence it is clear, that its occurrence in No. 9 in no way tends to prove that the latter is to be ascribed to the elder brother of that name.

---

[*] Also the addition of *b'illah*; though this occurs also on a few coins of Altamsh; *e. g.*, No. XXX, in *Chronicles*, p. 53.

[†] There still remains some difficulty about this anachronism. For 'Alá-ud-dín himself changed the Khalif's name on his coins, from 641, see *Chronicles*, p. 122. And it seems strange, why Náṣir-ud-dín, when he wanted to imitate 'Alá-ud-dín's coins, did not make a more appropriate selection. But the peculiarities of the coin, and the ease of its adoption on account of the omission of any date, may have influenced him.

In the fourth place, the omission of any mention of a place of mintage appears to me to point to Dehli as its mint-place. For no one would think of the provincial mint of Lakhanautí, unless that place were specially indicated. But if the coin was struck at Dehli, it could not have proceeded from the elder Náṣir-ud-dín, who, if he coined at all any coins in his own name, must have done so in Lakhanautí, the capital of his Bengal governorship.

2. Regarding Sulṭán Mughíṣ-ud-dín, it has been already mentioned that he made himself independent under that title during the long reign of the Emperor of Dehli, Náṣir-ud-dín. His history is narrated at length in the Ṭabaqát-i-Náṣirí, where however, unfortunately, no dates are given, and the exact period of his independence has not been known hitherto (see H. Blochmann, *Geography and History of Bengal*, in J. A. S. B., vol. XLII, p. 246). The coins, now discovered, however, help to clear up this obscurity. They show that in 653 he was already independent. Further the coin of Náṣir-ud-dín, No. 110, in Thomas' *Chronicles*, p. 129, bearing the joint name of Ikhtiyár-ud-dín Yúzbak (as Mughíṣ-ud-dín was called before he made himself independent), which is dated either 651 or 652, shows that his independency cannot have commenced earlier than either of those two years, more probably towards the end of 652. Lastly there is a coin of Náṣir-ud-dín in the Society's Cabinet,* which was struck at Lakhanautí and bears date the second month of the year 655, and which shows therefore that at that time Mughíṣ-ud-dín's independence must have been ended and the Dehli Emperor's sovereignty again acknowledged. According to the Ṭabaqát-i-Náṣirí, Mughíṣ-ud-dín lost his life in an unsuccessful war with the Rái of Kámrúd. This probably happened at the commencement of the year 655† and led to the re-establishment of

---

* See No. 30 in the Supplement, page 69.

† The second month or Ṣafar of the year 655 A. H. corresponds, as far as I can make out, to July of 1256 A. D. In the Ṭabaqát i Náṣirí (pp. 765, 766) it is stated that Mughíṣ-ud-dín was wounded and died not long after the *spring harvest*. This bring us towards the middle of the year (1256 A. D.) according to our reckoning, the spring harvest being in March or April.

the Dehli supremacy. Altogether Mughís-ud-dín's independent Salṭanat cannot have lasted much longer than two years (653 and 654).

SUPPLEMENT.

Since writing the foregoing account, I had occasion to examine the Muhammadan coins in the Society's cabinet, in conjunction with the Hon'ble Mr. J. Gibbs, C. S. Distributed in various bundles and mixed up with Paṭhán and Moghul coins, we found a small number of coins of the early Bengal series. These I afterwards examined with the following result. It will be seen that there are among them a few pieces of considerable interest.

There were 8 coins of Shams-ud-dín Altamsh.
3 „ of Ghiyáṣ-ud-dín 'Iwaz.
3 „ of Jalálat-ud-dín (Riẓiyah).
2 „ of 'Alá-ud-dín Mas'aúd Sháh.
5 „ of Náṣir-ud-dín Maḥmúd Sháh.
2 „ of Mughíṣ-ud-dín Yúzbak.

I. COINS OF SHAMS-UD-DÍN ALTAMSH.

No. 13. *Silver.* Weight 148 grs. A duplicate of No. 3; but margin altogether illegible.

No. 14. *Silver.* A duplicate of No. 4; now in the possession of Mr. Gibbs, by exchange.

No. 15. *Silver.* Weight 164½ grs. A variety of Nos. 4 and 14. Margin partially legible ضرب ...... شهور سنة تلثين و ستة مایة. Date 630. The variety consists merely in the slightly different formation of the letters.

No. 16. *Silver.* Weight 151½ grs. Like Nos. 4 and 14 in everything but the date, which is 632. The margin is almost complete الفضة في شهور سنة اثنا و ثلثين و ستة مایة.

No. 17. *Silver.* Weight 148½ grs. Apparently a badly preserved duplicate of No. 16.

No. 18. (Plate III, No. 1). *Silver.* Weight 161 grs. Belongs to type No. XXXI in Thomas' *Chronicles*, p. 53. But in the present coin both marginal readings are not identical. According to that on the reverse, this money is derived from the land-revenue of Kanauj and some other place the name of which I cannot read.

Obv. ضرب هذا الفضة في بلاد الهند حضرت ......
Rev. ...... خراج قنوج و ?

No. 19. *Silver.* Weight 165 grs. (Plate III, 2). *Unique.* It belongs to type Nos. 4, 14, 16 (or No. XXX in Thomas' *Chronicles*, p. 52), which it resembles in every respect, except that it names *Laknauti* as its place of mintage. As far as I know, this is the only coin of Shams-ud-dín hitherto known (or at least, made known), which expressly bears the mint name of Lakhanautí. Margin complete : ضرب هذا السكه بلكنوتي في شهور سنة ثلث ثلثين و ستمايه. It is dated A. H. 633.

No. 20. *Silver.* Weight 156½ grs. Apparently a duplicate of No. 9 in Thomas' *Initial Coinage of Bengal*, Pt. II, p. 359 (in J. A. S. B. vol. XLII). The margin, however, is almost illegible. The place of mintage is not mentioned, but it must have been Lakhanautí in Bengal, as it follows the type of Ghiyáṣ-ud-dín's coins (see below).

II. COINS OF GHIYÁṢ-UD-DÍN 'IWAZ.

No. 21. *Silver.* Weight 161 grs. Duplicate of No. 4 in Thomas' *Initial Coinage*, Pt. II, p. 354.

No. 22. (Plate III, 3). *Silver.* Weight 160½ grs. Resembles No. 5 in Thomas' *Initial Coinage*, Pt. II, p. 356, in every thing but the marginal legend which reads differently and gives a different date, A. 616.

Margin : ? السكه .... شهور ? سنة ستة عشرة

No. 23. *Silver.* Weight 157 grs. Duplicate of No. 6*a* in Thomas' *Initial Coinage*, Pt. II, p. 356. But the margin is not quite complete.

ضرب ...... السكه في ربيع الاخر سنة سبع عشرة و ....

III. COINS OF JALÁLAT-UD-DÍN (RIẒIYAH).

No 24. (Plate III, 4). *Silver.* Weight 162 grs. This is a duplicate of No. 6. But fortunately in the present coin that portion of the margin, which contains the date 634, is complete, while the other portion containing the mint-name is wanting.

Margin : ضرب هذا .... شهور سنة اربع ثلثين ستمايه

No. 25. (Plate, III, 5). *Silver.* Weight 159 grs. This is a variety of No. 7, which it resembles in every respect, except that the word ابنت is not placed between التمش and السلطان but, interlinearly, above them. A duplicate of this coin is described and figured by Mr. Thomas in his *Chronicles*, p. 107 (Pl. I, 27 and Pl. VI, 1). The margin, unfortunately, is incomplete ; it gives the date distinctly, but the mint, which no doubt was Lakhanautí, is omitted.

Margin : ضرب هذا........شهور سنة خمس ثلثين ستمايه

No. 26. *Silver.* Weight 146 grs. A very badly preserved duplicate of No. 25. Of the marginal legend only الفضه بلكنوتي remains ; thus fixing Lakhanauti as its place of mintage.

IV. COINS OF 'ALÁ-UD-DÍN MAS'AÚD SHÁH.

No. 27. (Plate III, 6). *Silver.* Weight 142 grs. Apparently *unique.* This coin shows the same inscriptions as No. 8, with all its peculiarities; *viz.*, on the reverse, the addition of *b'illah* after *Al Mustanṣir* and of *llah* after *Al Mominín;* and on the obverse, the omission of the article *us* (ال) before *sulṭán.* It differs from No. 8, however, by the possession of a margin with inscriptions on both sides, of which illegible traces are still distinguishable. The original presence of margins is also evidenced by the fact of the size of the square areas being much smaller than in No. 8. The letters, also, are much more neatly formed on the present coin, than on No. 8. As a further minor difference it may be noted, that the segments on the reverse of the present coin show the usual four dots arranged two on each side of a small loop, while on No. 8 the loop is absent. There are traces of a word, in the left hand corner, below بالله, which I cannot quite make out. They look like حمد *hamd* "praise", or perhaps خلد. And it may be noted that on No. 8 there are also traces of a word in the same place.

Obv.	*Rev.*
السلطان الاعظم علا الدنيا و الدين ابو المظفر مسعود شاه بن سلطان	في عهد الامام المستنصر بالله امير المومنين لله
Margin: illegible.	*Margin:* illegible.

No. 28. (Plate IV, 1). *Silver.* Weight 145 grs. Apparently *unique.* This coin agrees with Nos. 27 and 8 in omitting the article *us* (ال) before *sulṭán* on the obverse.* For the rest, the legends are the usual ones, as on No. 97 in Thomas' *Chronicles*, p. 122; that is, بالله and لله, on the reverse, are omitted. It is not quite clear, whether there were originally any margins with legends; there are no apparent traces left.

I may, here, add that there are several coins of the usual type (like Nos. 97, 98 in Thomas' *Chronicles*, p. 122) in the Society's Cabinet.

V. COINS OF NÁṢIR-UD-DÍN MAḤMÚD SHÁH.

No. 29. (Plate IV, 2). *Silver.* Weight 140½ grs. *Unique.* This is the coin which Mr. Thomas has described and figured in his *Chronicles*, p. 129, No. 110. I have thought it desirable to re-figure it, as Mr.

---

* Unless the scrawl over the س of *sulṭán* should be meant for ال.

Thomas has only given the obverse, which does not contain the marginal legend with the date, and because the facsimile of the obverse given by him is not quite exact. As I have already mentioned on p. 60, the name *Yúzbak* is distinctly recognizable in the lower left-hand-corner. The word just preceding the name I read doubtfully المعين *Al Mu'ain* "the appointed one" or "the assistant"; the letters مع *mím* with the *pesh* over it and the following *'ain* are quite distinct. Below this word, again, there are traces visible of خان *Khán* or سلطان *Sulṭán*, perhaps of *Ṭughril Khán*, a name of the Yúzbak.

No. 30. (Plate IV, 3). *Silver.* Weight 169 grs. *Unique.* In general, style of execution this coin very closely resembles No. 10; but it omits *Sháh* after *Maḥmúd* and adds the article *al* to *Sulṭán.* The date in the margin is: Month Ṣafar in A. H. 655, which is noteworthy, as fixing the termination of the independent Salṭanat of Mughíṣ-ud-dín.

Obv.	*Rev.*
السلطان الا عظم	في عهد الا مام
ناصر الدنيا و الدين	المعتصم امير
ابو المظفر محمود	المومنين
ابن السلطان	*Margin:* ضرب هذا السكه
	بلكنوتي في صفر سنه خمس
	خمسين و ستمايه

No. 31. *Silver.* Weight 169 grs. Belongs to type No. 106 of Thomas' *Chronicles*, p. 127, to which it is like in every respect, excepting the date which is 655.

No. 32. *Silver.* Weight 162 grs. A variety of the same type as No. 31, but the square areas are larger and the letters of a coarser make, closely resembling No. DCXIV in Marsden's *Oriental Coins.* Both margins are almost altogether worn away.

No. 33. (Plate IV, 4). *Silver.* Weight 167 grs. A variety of the same type as No. 32. On the obverse a small portion of the margin is left: .... بحضرت دهلي ..., naming Dehli as the place of mintage.

V. COINS OF MUGHÍṢ-UD-DÍN YÚZBAK.

No. 34. (Plate IV, 5). *Silver.* Weight 168 grs. Triplicate of Nos. 11 and 12; the best preserved among them.

No. 35. (Plate IV, 6). *Silver.* Weight 145½ grs. Variety of Nos. 11, 12, 34. The letters on the reverse are not quite so well formed, especially in the margin, where, *e. g.*, سل (or ثثل) stands for ثلث.

While examining these coins I have been led to make two observations which I should like to mention.

1. As to the place of mintage. In the case of Shams-ud-dín's coins of the horseman type no mint-place is mentioned (unless indeed it be contained in one of the illegible scrawls). Mr. Thomas ascribes the coins of this type to a Bengal mint (see *Initial Coinage*, Pt. II, p. 352), on two grounds: *first*, because these coins have been found in conjunction with others which are undoubtedly of Bengal mintage; and *secondly*, because a unique gold coin of this type actually bears the mint name "Gaur" on its reverse (ضرب بکور).* Neither reasons, however, appear to be quite conclusive. As to the former, coins of undoubtedly Dehli mintage also have been found in conjunction with them; *e. g.*, Nos. 3 and 4, coins of which type Mr. Thomas himself ascribes to Dehli. Then secondly, though the reading *Ẓarb ba Gaur* (not *Ẓarb Nagor*) is most probably the true one, it only proves that particular (unique) gold coin to be Bengal-struck; it may be an exception; it does not show that the silver coins of the same type were also struck in Bengal. It is certain from coins of other types, that Shams-ud-dín struck coins *of the same type*, both at Dehli and at Lakhanautí; and it is to be observed that those struck at Dehli bear no mint name, while those struck at Lakhanautí bear that name. Thus the coins, Nos. 4 and 19, are of *exactly the same type;* but No. 4, which does not name any mint, is admittedly of Dehli, while No. 19 is of Lakhanautí, because it expressly names that mint. Speaking generally, it seems but reasonable that in the case of coins of Dehli Emperors, when no mint is named, it should be the Imperial mint of Dehli. In their case no one would think of another mint, but the Imperial one, unless it were expressly mentioned that they were struck at a provincial mint (Gaur or Lakhanautí). On the same principle (though the result is different), in the case of the coins of the Bengal Sulṭán Ghiyás̱-ud-dín 'Iwaz which name no mint, the latter must be a Bengal mint (Gaur or Lakhanautí); because Ghiyás̱-ud-dín being merely the ruler of Bengal, no one could think of any other but the principal Bengal Mint. Accordingly I incline to the opinion, that all coins of Shams-ud-dín of the Horseman type, which bear no mint name, are to be ascribed to Dehli;† and further, generally, that all coins of Dehli Emperors, without any mint name, must be thus ascribed. Major Raverty, in his Translation of the Ṭabaqát-i-Náṣirí, p. 772, while questioning Mr. Thomas' ascription of these coins to Bengal mints, thinks they may have been struck in Bihár, on the occasion

---

* Maulvi Abdul Hai of the Madrasah, however, informs me that the correct Muhammadan spelling of this name is *Ghaur* غور.

† Their connection with Shams-ud-dín's *Dehli copper* coins of the Horseman type (*Chronicles*, p. 71) is obvious.

when Shams-ud-dín "sent forces from Dehli towards Lakhnautí, possessed himself of Bihár, and installed his own Amír therein." But there is really no evidence of the existence of a Bihár mint at this time; but the passage quoted from the Muhammadan historian may show how it came to pass that some of Shams-ud-dín's coins, struck at Dehli, were carried thence to Lakhanautí.

The second observation refers to the style of the letters. Three different styles can be clearly distinguished: a rude and ill-formed, an ordinary square and an ornamental oblong. The first style may be best seen in Nos. 1 and 5; the second in Nos. 4, 29, the third in Nos. 3, 11. The rude form is peculiar to the early Bengal coins of Ghiyás̤-ud-dín 'Iwaz and to Shams-ud-dín's coins of the horseman type. The ornamental oblong is seen in all Bengal coins of Mughís̤-ud-dín. The imperial coins show both the ordinary square and the ornamental oblong style, more or less distinctly; thus compare Nos. 3 and 4 of Shams-ud-dín and Nos. 10 and 29 of Náṣir-ud-dín. Whether any and what conclusions may be drawn from these facts regarding the mints from which they may have been issued, I must leave others to decide, who understand more of Indian Numismatics than I do.

On the Coins of the Sikhs.—By CHAS. J. RODGERS.

The power and rule of the Sikhs have passed away. The year which witnessed the total destruction of the Sikh army at Gujrát, witnessed also the annexation of the Panjab to British India. Since 1849 the Sikhs have been nothing more than what they were before the time of Gobind Singh, a religious sect. All signs of their political influence and superiority are fast passing away from the country. When the present generation has passed away, there will be little in the Panjab to show that the Sikhs were once rulers. Even now it is forty years since the death of Ranjít Singh, and it is only here and there one meets a Musalmán zamindár who tells us of what he suffered from Sikh extortion and oppression. And it is only now and then one meets with a grey beard who glories in the memories of the raids of the Sikh soldiery.

The history of the Sikhs from the time of Nának to the battle of Gujrát is one of the most interesting and instructive studies in the whole range of modern revolutions. It shows how religiousness and quaintness, combined with self-denial and an open house can carry the day against all established customs and national prejudices. It shows how a little truth combined with shrewdness and eccentricity, audacity and assertion, bold and long continued, can at last prevail over all objections. By religiousness I do not mean real godliness, I only mean the performance of those actions which are accounted religious by the people amongst whom they were performed. There was very little in the characters of some of the Sikh religious leaders to mark them as teachers of religion. Their lives were loose, as were their doctrines. We read constantly of faith and of saving faith in Sikh books. But it resolves itself into faith in the Guru who claimed for himself perfect infallibility, if not perfect equality with god. The commandments of Sikhism have to do with wearing long hair, abstinence from cow's flesh and Muhammadan women and smoking and drink. They encourage bloodshed, hatred, malice and all uncharitableness wherever and whenever Muhammadans are concerned. The modern Sikhs are, however, a temporizing lot of people, and they find our rule too obliging to their superstition. Their zeal and energy are not employed against the English but against Sikh declension from ancient ritual and discipline. The Kookas were Sikh Wahabees or Wesleyans, and so are the Nirmalas.

As this paper has to do with the *coins* of the Sikhs, the symbols of their temporary power, it may be as well, although it is an oft told story, to give here a short account of the rise of the Sikhs, and to show how they became changed from a religious sect into a ruling power.

1. *Nának* the founder of the Sikhs was born in **1469 A. D.** at Talwandí near Lahore. This was in the time of Bahlol Lodi. His father was a Khatrí. He early became a recluse and joined himself with a Musalmán musician named Mardáná. He afterwards wandered about like a modern faqír. In these journeys he must have got some ideas about Muhammadanism and Hinduism beyond what his native village could have given him. Nának died at Kartárpur in 1538, in the 7th year of the reign of Humáyún. There is no trustworthy account of his life. He seems to have been as friendly to Musalmáns as to Hindús. At his death one party wished to bury him and the other to cremate him. His doctrine was that there was one God. But with this he mixed much of polytheistic Hinduism and more of mysticism. At the same time he took good care to insist on his own guruship and on the necessity of giving alms to him as guru. To his followers he promised participation in all that was given to him. He made disciples from both Muhammadans and Hindús. Before his death he appointed a Hindú, named Angad, his successor. Nának's disciples (Sikhs) were an ignorant rabble, few of them knowing how either to read or write. They were his servants and followed him for what they obtained as alms or in the shape of food.

2. *Angad*, the second guru, did not rise above his fellow Sikhs in scholarship. His influence on his sect was *nil*. He simply figures as a man named a guru. He died in 1552 A. D., having made his servant Amar Dás his successor, to the exclusion of his sons, as Nának had done

before him. In all this we can trace the influence of Muhammad's Khalifahs who acted at first similarly.

3. *Amar Dás* was a Khatrí. He lived at Gobindwál. He, though unable to read and write, composed some verses which are inserted in the sacred writings of the Sikhs—*the Granth.* He died in 1574 A. D., having nominated his son-in-law Rám Dáss his successor.

4. *Rám Dáss* was an inhabitant of *Chak* or Umritsur, or rather he settled there after his marriage, and the place was afterwards known as Guruchak. About this word Chak, we may notice that the "principality of Cheka, the ancient Sákálo, stretched from the Beas on the east to the Indus on the west, and from the foot of the Rájáorí hills to the confluence of the Panjab rivers.* "It therefore comprised all the plains of the Panjáb.......The Cheka of A. D. 650 had in fact the same limits as the kingdom of Lahore in A. D. 1650."† Cheka would seem to be the country inhabited by the Sákas or Indo-Scythians. In the late trip of His Honor the Lieutenant-Governor of the Panjáb to Kulu, Thákur Hari Chánd of Lahoul presented him with three Kanerki coins and a medallion, saying, that these coins belonged to "the dynasty of the Sák-po kings which existed very long ago." But the word *chak* means also the wood placed under the brick work in a well. This, however, would not apply to Umritsur as here was a fountain and not a well. Hence we may regard Chak as being a remnant of the old *Cheka* or *Sákala* of the Scythians.

Rám Dáss prospered as a guru. He seems to have had a literary turn. As he collected alms, he dug out the tank from which Umritsur takes its name. But he did not build it, that is, as we say in India, he did not make the tank *pakka.* For in his successor's time the tank was overgrown with weeds. He died in 1581 A. D. The tank was dug out in 1578 A. D. It was *outside* the city walls. Dr. Trumpp says the city grew *round it.* This was the case afterwards, but not in the time of Rám Dáss. There is still visible in the city an old gate called the Darshaní Darwáza. This was the gate by which worshippers were wont to leave the city, when they were going to visit (*darshan karná*) the temple. There are several other gateways still visible, and the walls can be traced. The present city is many times larger than what was called Rámdáspúr. At present it is the custom to dig tanks *outside* cities, not inside. There were several tanks outside Rámdáspúr. These formed into *dábs* afterwards in some cases. They have now been filled in and will be converted into intra-mural parks or gardens. There were other tanks also outside the city which are now tanks inside, such as the Santokhsar, Rám Sar and Viveksar. *Sar* is Persian for a fountain or head of a river.* *Amrit* is the water of *immortality*. But the Sikhs of the present century spell the word with a *b* and call it *Ambratsar*. On the Gurmukhí coins it is thus spelt. On the lamp shades in the railway station I notice the word is printed probably by an Amritsar man امبرت سر The *b* is very plain. Some etymologists (Sikhs never were troubled with learning) derive the name from *Ambar* (عنبر) = ambergris, or a rich perfume. Amritsar is certainly a place of strong smells, but by no means pleasant.

---

* J. A. S. B., p. 693, for 1854.

† *Ibid.* footnote on same page.

5. Rám Dáss was succeeded by his son *Arjan*. And from this time the guruship became hereditary. Arjan built the tank and temple, but not those which exist now. The present structure is a more modern building. He began it in 1588 A. D., the year of the Spanish Armada. Tradition says that there was a grand procession formed, that portions of Nának's sayings were recited, and that the guru laid the first stone. But the bricklayer did not consider it laid properly, so he took it up again and relaid it. Arjan then prophesied that the building he was commencing should be one day destroyed and again rebuilt. But Arjan did more than build the temple. He collected the saying and verses of Nának and others, and wrote them in Gurmukhí letters in a book which is called the Granth. This book therefore represents to a certain extent the moral maxims of the teachers who had existed before Arjan's days in the Panjáb. It being in the language of the people, has always exercised much power over them. It was *the* book in the mother-tongue of thousands of unlettered men and women. No wonder they reverenced it. It is now called the *Granth Sáhib*, and the temple is called the *Durbár Sáhib*: while Amritsar, the city which contains the two, is spoken of as *Srí Amritsar*. It is more reverenced now than either understood or practised. Its language, being three centuries old, is not intelligible now to the masses. Many changes have come over the people in those three hundred years of Mogul rule and rise of British power.

Arjan was enabled by his followers' gifts to maintain some kind of state. He made arrangements for his income being collected with regularity. But Amritsar lay in the road between Dehli and Lahore, and Arjan unfortunately brought himself to notice by leaning favourably towards the rebellious son of Jahángír. That rebellion was wiped out with one of the most bloody acts the history of India records. 700 men were impaled and poor Khusrau was led between the rows to be regaled with the groans and shrieks of the victims. Arjan escaped this horrible death. But for all that, he was killed at Lahore in 1606 A. D., one year after the gunpowder plot. His dabbling in politics was not a success.

---

* [Or rather, *sar* is the Sanskrit *saras* "pool, tank," which in the modern Indian languages becomes *sar*. *Santokh-sar* or *santosha-saras* is the "tank of contentment;" *Rám-sar* "the tank of Rám," *Vivek-sar* "the tank of discrimination." Ed.]

6. *Har Govind* was his successor. He was a man with a military turn. But as there was an established government, his movements must have resembled those of a freebooter or an insurgent. He built Srí Hargovindpúr on the river Beas to serve as a place to flee unto when any actions of his made flight a necessity. Joining the regular army, he rendered himself obnoxious by appropriating the pay of the soldiers. He was imprisoned many years for this. He afterwards entered the service of Sháh Jahán. But his old propensities broke out afresh, and he left it and became once more a freebooter. Rámdáspúr was taken by Sháh Jahán's troops, but in an encounter with Har Govind at Kartárpur they were defeated. After this, however, Har Govind was compelled to take refuge in the hills where he died, 1638 A. D., in the house of a robber with whom his son had been residing.

7. *Har Rái* succeeded his grandfather Har Govind. He joined Dárá Shikoh, the unfortunate brother of Aurangzeb, against that astute and wily monarch. When Dárá was beaten, the result was not favourable to Har Rái. He died in 1660 A. D., having done nothing worthy of notice.

8. *Har Kisan* succeeded Har Rái his father. He died in 1664 A. D., having accomplished nothing.

9. *Tegh Bahádur*, third son of Har Govind, next became Guru. He took up his residence at Ánandpúr, but as a rule led a roving life like a common faqír. In one of these excursions he was imprisoned at Dehli. But it turns out that this excursion was a predatory one, and as a consequence he was not only imprisoned, but executed A. D. 1675.

10. *Govind Singh* his son succeeded him, although only 15 years old. He knew some Persian and Hindí. He began his guruship by practising austerities to secure the favour of the goddess Durga, whose divine assistance he needed in order to wreak vengeance on the Musalmán rulers who had punished his father for his misdeeds. The moral obliquity of the Sikhs is not to be wondered at. Their surroundings were against all integrity of morals. We are told of this guru that he was a proficient in the science of Kok. But this statement never seems to have affected his position as guru.

His life was that of warrior-priest or a Knight Templar. His eccentricities are regarded as his religious teachings. His worship of iron, because by its aid he plundered, is one. His institution of the *kes*, or unshaven hair, is another. He lived at Ánandpúr while his own hair grew. Hence this place is sometimes called *Kesgaṛh*. He wore a comb, to comb his hair with, a dagger and a sword. His dress consisted of a pair of short cotton breeches which came part way down the thigh. He abolished caste, instituted *pahal* or baptism, created the khalsa and ordered all his baptized disciples to be called *Singhs*. Besides this he wrote a book in which all his ideas are stated. This he called the "Granth of the 10th reign or Guruship." The one compiled by Arjan is known as the "Adí Granth." But Govind's Granth is not all his own. It consists of compilations from the works of the poets he had about him.

His wars with his neighbours could not long go on without the interference of the imperial troops. Two of his sons were killed in these disturbances. Two others were slain at Sarhind by the governor into whose hands they had been betrayed. This act has obtained for this city the Sikh title of *fitmunhín* "the accursed." Govind Singh himself became a fugitive. In Málwa, at a place called Damdama, he at last found refuge. But he afterwards removed to Ánandpúr. After the death of Aurangzeb he once more came into public notice and took service under Bahádur Sháh, who gave him a military command in the Dakkin. He, however, returned to Ánandpúr for awhile to look after the affairs of his guruship, which were getting into confusion through the extortions of his tithe collectors. After this he went to Nander in the Nizám's Dominions on the Godavery, where he was murdered by the sons of a man whom he had himself murdered. It seems that he had purchased horses from this man and had not paid him. The man wanted his money and dunned the guru for it. The guru, who was never famous for meekness, getting angry one day slew him.

Thus we see that the last two gurus, father and son, came to a violent death which resulted from their own wrong-doings. Govind Singh was murdered in 1708 A. D.

Much false sympathy has been bestowed on the fate of these two men. But the truth is that were two such men to arise now in India, there is no doubt they would be hunted down. No sooner did Rám Singh, the Kooka leader, try his hand at raiding, than the authorities were after him. His people were taken red-handed, fresh from their fight, and they were blown from guns by the Deputy Commissioner of Ludiana and the Commissioner of Amballa. The former officer was strangely enough made to go on pension (thus losing about a thousand rupees per mensem), the latter officer was appointed to an ambassadorship to Central Asia and knighted.

Govind Singh was the last Guru. He appointed a faqír, named Banda, to the leadership of the Sikhs. This man seems to have been ignorant of the precepts of Govind. But he understood and followed his practice. This in the course of a short but dreadful career of eight years' constant depredations caused him to be taken prisoner by the imperial army at Gurdáspur in the Panjáb. He was taken to Dehli and put to death by frightful torments in 1716 A. D. No Sikh bemoans his death. He was a man whose actions were so cruel, that in those days an example was necessary.

After the imperial government had seen what the outcome of the Sikh movement was, there was not much enquiry as to their principles and doctrines. They were disturbers of the public peace, and as such they were hunted and slain.

We have now to trace briefly the history of the next 83 years in the Panjáb. In 1799 A. D. Ranjít Singh took Lahore. But from the death of Banda to the accession of Ranjít Singh an interval of 83 years has to be accounted for. It will easily be understood that the chance of plunder, combined with the performance of a religious act, would serve as sufficient stimulus in the heart of every Sikh to action against the Musalmán authorities. Unfortunately opportunity was not wanting. The imperial family at Dehli was like a wheel of sixteen spokes. The first had been strong enough. But they had been prosperous. Prosperity had begot luxury and luxury, debauchery. The successors of Akbar and Babar could no longer rule. The empire lay at the mercy of any one strong enough and bold enough to take it. Nádir Sháh invaded India in 1738-9. The results of his invasion are well known. Both before and after this Persian incursion there was a Muhammadan governor of Lahore. The Sikhs, who formed themselves into plundering companies, were on several occasions out-manœuvered, taken, and executed. After the death of Nádir, Ahmad Sháh Abdálli or Durrání obtained the ascendancy in Kabul, and of course he regarded India as his lawful prey. But from the death of Banda to Ahmad Sháh's first invasion of India in 1748 A. D. there is a space of 32 years. During this time Sikhism, in spite of Muhammadan suppressions had prospered, as all wrong prospers where it is not exterminated. Hence during this first invasion the Sikhs erected a small fort at Amritsar. This fort, when the invasion was over, was destroyed by the Muhammadan governor of the Panjáb. The invader was a Muhammadan and the defender was a Muhammadan, hence both were to the Sikh his legal prey. Lahore was taken a second time by Ahmad Sháh in his third incursion in 1752 A. D. In this period of change the Sikhs prospered and increased in numbers.

The fourth invasion of the Abdálli took place in 1755-6, Prince Taimin was then made governor of Lahore. He drove the Sikhs out of Amritsar and destroyed the stronghold they had erected. But in his turn he was so harassed by the Sikhs that he was obliged to retire to Multán, and the Sikhs occupied for a short time Lahore and Amritsar. It was during this temporary occupation of Lahore that the first Sikh rupee is said to have been struck by Jassa Singh Kullál, the Sikh leader. It had on it the following inscription in Persian :—

سکه زد در جهان بفضل اکال
ملک احمد گرفت جسا کلال

Mr. Lepel Griffin in his "Rájáhs of the Panjab"* says "Nor were these coins struck before 1762, not in 1757-8, as stated by Cunningham, and it is very doubtful whether they were ever struck in large numbers at all. The Rájáh of Kupurthalla has none in his possession, nor do I know any one who has seen one. The "*Tawarikh-i-Panjab*" of Ganesh Dass, states that the Sikhs did not strike this coin, but that the Kazís and Mullahs in 1764, after the famous Nának Sháhí rupee had been struck, and desiring to anger Ahmad Sháh against the Sikhs, coined 21 rupees with this inscription themselves, and sent them to the Sháh at Kábul, who was as indignant as they anticipated at the insolence of the Distiller (Kalál) who claimed to have seized his country *(Mulk-i-Ahmad).*" I may add that I have hunted through some thousands of Sikh rupees myself but have never seen one yet. If they were sent to Kábul to Ahmad Sháh direct, he probably broke them up at once.

The Mahrattas were at this time paramount in Dehli. They became naturally the rulers of the Panjáb and they took Sirhind, Lahore, Multán and Attock. This brought Ahmad Sháh once more to India. His fifth expedition was in 1759-61. He retook the Panjáb and extended his arms across the Ganges. (He struck rupees in his 14th year at Murádábád). But the one great action of this campaign was the battle of Panípat in 1761, in which the power of the Mahrattas in Northern India was utterly destroyed. Ahmad Sháh did not know how to improve a victory. He left for Kábul immediately after Panípat. Of course the usual thing happened. The Sikhs rebelled against his governors, and that rebellion induced his return in 1762. In this invasion he turned his arms chiefly against the Sikhs who on all previous occasions had always hovered around his armies whether victorious or defeated. They had never been well taken in hand before and had received but scant attention from the conqueror. Hence their numbers had increased marvellously. From the fact that the Sikh loss in the great battle which took place "between Gujerwal and Bernala, twenty miles south from Ludiana," is estimated at from twelve to twenty-five thousand men, we may calculate the full Sikh power at that time at something between fifty and a hundred thousand fighting men.

On his return from this great victory Ahmad Sháh not only destroyed the temples around the tank at Amritsar, but he killed cows in them and washed the Muhammadan shrines, which had been defiled by swine's blood, with the blood of slaughtered Sikhs.

The Sikhs were not, however, destroyed. The truth is that during all this anarchy and invasion and counter rebellion, there had been many important families in the Panjáb rising quietly into power and importance. These families had summoned their retainers round them. The leaders and the retainers had one common ground for discontent, one common bond of union, their faith. They were Sikhs. Their oppressors were Muhammadans. Each of these leadings was called a Misl. The whole of the Misls was termed "the Sarba Khalsa or whole Sikh people." Here were then materials for the formation of a mighty republic in the East. But there was only one Washington on earth in those days and he was in America. The spirit which animated him and his fellow countrymen was one of liberty and law and desire for the common weal. In the Panjáb there was no such man and no such spirit. The Panjáb had passed through no preliminary training and was not fitted for liberty. Each man, as he had risen by oppression, maintained himself by the same means. His chief thoughts were for self-aggrandizement. Hence these twelve Misls of the Sikhs became twelve centres of jealousy. So long as Ahmad Sháh kept on invading India, they remained to a certain extent united against a common foe. After he left India, after his 7th expedition in 1764, the Sikhs for a while combined. They were to have had a "Gurumata" or assembly of the chiefs (a congress or parliament) once a year, but it never came to anything, or its meetings were attended only by the religious. One thing is certain, they got possession of Lahore and Amritsar. And at this time they struck, in Láhore the political capital of the Panjáb, the first Sikh rupees. They were called "*Gobindsháhí*," not "*Nának Sháhí*" as Mr. Griffin states. The latter term came into use afterwards as we shall see. The inscriptions were the following :—

---

* Footnote, p. 506.

Obverse—	Reverse—
دیگ تیغ و فتح و نصرت بےدرنگ	ضرب دار السلطنت لاهور
یافت از نانک گورو گوبند سنگه	سمبت ۱۸۲۲ میمنت مانوس

See plate V, fig. 1. It is a rupee of good, almost pure, silver, weighing 177 grs. which is the average weight of the rupees of the Moghuls. The distich on the obverse is intended for Persian poetry. It means "Abundance (the word is *deg* = cooking-pot ; we have the same vulgarism in England—'to keep the pot boiling' means to have food sufficient for daily use) the sword, victory and help without delay, Guru Gobind Singh obtained from Nának." The Sambat year on the reverse is 57 years in advance of our year. Hence this rupee was struck in 1765 A. D. I have rupees of this type struck in Lahore, for the years 1822, '25, '26, '27, '28, '30, '31, '32, '33 and '34 There was an interruption in 1766 and '77 (*i. e.* in 1823 and '24) caused by Ahmad Sháh's last descent on India. There may be rupees for some of the missing years. But we can scarcely expect to find them for the years 1823 and '24, S. Ahmad Sháh invaded India for the last time then. During this invasion the ruler of Patiála received from

Ahmad Sháh a *sanad* making him a Mahárájá. He is therefore the oldest Mahárájá in the country and unlike all the rest was created such by a Musalmán.

The years after the departure of Ahmad Sháh were times when one misl after another became pre-eminent. The whole of the Panjáb lay at their mercy. Multán, Kussúr, Pákpattan, Kángra were scenes of many a bloody fight. It was not so much then Sikh against Muhammadan, but Sikh against Sikh, Misl against Misl. Taimúr Sháh son of Ahmad Sháh was obliged to come against Multán in person in 1778-9 A. D., and it was surrendered to him by the leader of the Misl occupying it. But Sikhism had no more interruptions from Afghánistán during the time of Taimúr Sháh. From Delhi, too, little opposition was shown. The steady way in which rupees were struck in consecutive years shows that the mint towns were comparatively free from attack.

Fig. 2, Pl. V, is a rupee struck at Amritsar in 1335 S. The inscriptions are both quite different from those on fig. 1.

Obverse—	Reverse—
شاه نانگ صاحب	ضرب سري امبرت سر
فتح سعي گورو گوبند سنگه فضل	جلوس تخت اكال بخت
سکه زد برهردو عالم صاحت	سمبت ١٨٣٥

1 do not pretend here to give correct readings. The reverse is I think correct. I have four rupees of this series 1835, '36, '37, '38. They enable me to read the mint as امبرت سر distinctly. The *b* and the dot under it are most marked. The reading of the obverse is far from satisfactory. The 3rd line is not in my figure. But it is all on a coin which I have of the year 1836. The middle line is correct. The top line has *Sháh Nának* on it undoubtedly. The whole may be read thus—"The man of victory, obtained by the exertion (سعي) of Guru Gobind Singh and the grace of king Nának, struck this coin in each of the two worlds." I must confess I am not satisfied with this rendering. But after years of search midst thousands of coins I am able to do no more with certainty. This therefore is the Nának Sháhí rupee.

Fig. 3, Pl. V, is a rupee also of Amritsar. But it returns to the obverse on fig. 1. In the reverse inscription, however, are some new features, first the *kaṭár* or dagger: (2) the word جلوس and (3) the word احد. The full reverse is this:—

ضرب سري امبرت سر
سمبت ١٨٤١
جلوس ميمنت مانوس احد

I have a rupee of this same year with a similar obverse, but with the reverse containing, instead of Amritsar انند گهره and instead of the *kaṭár*, a *gurz* or *mace*. It will be seen at once that *Ánandgaṛh* is spelt incorrectly. It ought to be انند گڑه . (This place is the fort in Ánandpúr to which we have so often referred. It is a town at which an annual fair is held to which all fanatical Sikhs resort. At one of these fairs one of the most accomplished Panjábí scholars, the Rev. Mr. Janvier of the American Presbyterian Mission, was cruelly murdered by an Akálí. The word احد too comes on this one. So here we have a first year of some new government or era. The kaṭár and the gurz would seem to indicate that it was to be one of brute force. I cannot say what it refers to. Just then Sikhism was in a ferment of raids and excursions and internal broils. There was no one leader pre-eminent. Combination seems to have been the custom just then. This word احد is used by all the Mughal emperors on their rupees from the time of *Sháh Jahán*, instead of the figure 1, for the first year. So that the existence of this word in this position indicates that in this year some new rule was inaugurated. In fig. 4, pl. V, we have on the obverse the figure ۳ above the word فضل, and ۴۳ on the reverse, thus showing that this rule or reform or new administration lasted for some time. In all Mughal rupees the same rule is followed. The year of the Hejira is on one side and the year of the reign on the other: only as a rule the latter comes with the mint town and the former with the king's name.

It is of this time 1841 S. = 1784 A. D. that Cunningham writes, "The Sikhs were predominant from the frontiers of Oude to the Indus." It was at this time that Mahá Singh, the father of Ranjít Singh, entered on that series of moves which landed him the head of the Sikhs. His son Ranjít was born in 1780. He himself died young, at the age of 27 only, in 1792, during his siege of Gujrát. But the coin I am inclined to attribute to the Sikh ascendancy, rather than to Máha Singh. Ranjít Singh never put the year of his reign on his coins.

Figs. 5 and 6, pl. V, are reverses of Ánandgaṛh coins of 1844 and 1846. I have one other of 1843 struck at the same place.

Their obverses are all the same as that of fig. 1.

The inscriptions on fig. 4 call for attention :—

Obverse— remains of	Reverse—
نانگ تیغ	ضرب سري امبرت سر
(فتح) رگو بند سنگه فصل سچا (صاحان)	میمنت بخت اکال تخت
سکه زد بر هر دو عالم	سنه جلوس ۴۳ (۱۸)

میمنت بخت اکال تخت I regard as Punjábí Persian in which there is more jingle than either good grammar or clear meaning.

Akál takht should mean the throne of the *Timeless one*, that is of God, and should go along with *Amritsar*. *Maimanat bakht*, both words mean the same, *prosperity*. *Bakht* is usually preceded by an adjective when used in a compound word. The language of the Granth Dr. Trumpp tells us is full of such jingle in which we seek in vain for clear meaning.

The term سچا شاهان comes for the first time, on this coin. Sachcha Sháh, "true king," is the title by which in the "Sákhí Book" Gobind Singh is always addressed. Here it is used in the plural (I have shown this in 7 and 8) and probably has to do with both Nának and Gobind Singh; for here *Nának* is not preceded by the term *Sháh*.

The years between 1846 S. and 1856 S. must have been years of great distraction and disorder all over the Panjáb. I find my cabinet, after my diligent search of years, without any rupees of this period except an Amritsar rupee of 1854.

In June 1856 S. Ranjít Singh entered Lahore. Before that time the city had been in the possession of at least three Sardárs, each of which held a portion of it. We do not need to give imagination much rein in order to conjure up a picture of what Lahore must have been during that period.

The historian of the Panjáb Rai Kanhiya Láll, C. E., has the following passage in his history of the Panjáb in Urdu prose, about what happened after Ranjít's entry into Láhore. The poets being all present :—

حکم هوا که کوئي ایسا مصرع فارسي مین تجویز کرین جو روپیه پر مصروب هو اُس مین گورو نانک و گورو گوبند سنگه کا نام بهي آجائے چنانچه بعد غور و تامل کے یهه شعر پسند خاطر هوا — دیگ و تیغ و فتح و نصرت بیدرنگ • یافت‌از نانگ گورو گوبند سنگه یهه شعر جب پسند هوچکا تو دار الضرب کے اجرا کے لئے حکم نافذ هوا اور فرمایا که ایك طرف روپیه کے یهه شعر مصروب هو اور دوسري طرف رنجیت سنگه لکها جائے اور شهرکا نام تحریر هو جسجگه وه مضروب هوا هو چنانچه اُسي روز شگون اجراے تکسال کا عمل مین آیا دوسرے روز کئے سو روپیه مصروب هوکر پیش هوا وه سب مسکینون اور محتاجون کو دیا •

This is all wrong. The distich in question was used first, as we have seen, on the rupees of 1822 S. It was not made for the 1st year of Ranjít

---

• History of the Sikhs. 2nd Edition, p. 179.

Singh. Neither were rupees struck quite so early. I have never seen a rupee yet of 1856. But I have several of 1857, struck in Lahore and these were the rupees first issued by Ranjít Singh. But they do not contain his name. Ranjít Singh put his name on nothing, gave his name to nothing. The fort he built at Amritsar is called Gobind Gaṛh; the garden he made there, Rám Bágh.

The rupees of 1857 S. = 1800 A. D. are shown in figs. 7 and 8, Pl. V. I have given both sides. There is no sign of "Ranjít" any where. Figs. 9 and 10 of the same plate give the obverses of two coins of 1860 S. and 1864 S., both struck at Lahore and containing the same inscription. A careful study of these will show how difficult is the task of reading coins which contain only a few of the centre words of the inscriptions. On the reverse is an anchor which on Lahore rupees is a new sign. Since the plate was drawn other coins have turned up: but they add to the inscription and confusion. The cross lines are the difficulties. The lower one on the obverse evidently is the حب of صاحب. The top one I have not yet read. However here are the complete inscriptions as far as I can make them out.

Obverse—	Reverse—
سب تیغ نانک واهب سب	Same as on No. I.
(ار فتح فصل گوبند سنگه شاهشاهان صاحب	With additions of anchor and leaf.
سکه زد بر سیم و زر	

After the accession of Ranjít Singh rupees were struck regularly every year at Amritsar and Lahore. After the conquest of Multán there must have been a mint established there, for the rupees run in pretty regular series. It may be as well here to give the events of Ranjít Singh's career after the capture of Lahore.

1801-2. Reduces Banghí Misl and Kussúr becomes tributary.

1802. Takes Amritsar.

1803. Repulses Sansár Chand, a hill rájá.

1804. Again repulses Sansár Chand.

1804-5. Obtains homage from governors of Jhang, Sahíwal and Multán.

1805. Holkar goes to the Panjáb, pursued by the English. Last Gurumata or national Sikh Council held. After this the Panjáb may be regarded as a kingdom or absolute monarchy.

1806. Ranjít Singh interferes south of Satlaj. Takes Ludiana.

1807. Takes Kussúr and the town of Multán but not citadel: still obtains tribute.

1808. Sikhs south of Satlaj ask for British protection.

1808-9. Mr. Metcalfe sent on mission to Ranjít. R. again invades territories S. of Satlaj.

1809. British troops occupy Ludiana. R. signs first treaty with British. He gets Kángra fort.

1809-11. Disturbances with the Gurkhas.

1810. Ranjít fails again in obtaining Multán.

1811. Sháh Zamán goes to Lahore. Ranjít Singh conquers states south of Kashmír.

1812. Sháh Shúja and family go to Lahore.

1813. Ranjít obtains possession of Attock. Sikhs defeat Afgháns afterwards near the town.

1813-14. Ranjít gets possession of the Koh-i-Núr diamond. Sháh Shúja and his family escape.

1814. Ranjít fails in an expedition against Kashmír.

1815. Comparative rest.

1816. Small raid towards the S. W.

1817. Nothing important.

1818. Multán taken after a siege of several months. Later in same year occupies Pesháwur temporarily.

1819. Kashmír conquered.

1819-20. Dera Gazí Khán conquered.

1821. Dera Ismáel Khán subdued.

1822. Minor quarrels, Ventura and Allard arrive in Lahore.

1823. Battle of Noshehra. Pesháwar reduced but not retained.

1824. Rebellion of Muhammadan tribes near Attock.

1825. Intentions on Shikárpur.

1826. Sick.

1827. Mission to Governor-General. Disturbances at Pesháwur.

1827-30. No conquests.

1831. Ranjít Singh meets Governor-General at Ruper.

1831. Expels Daudputras from S. W. Panjáb.

1831-3. Various negotiations. Fort Attock built.

1833. Sháh Shúja leaves Ludiana for Afghánistán. He defeats Sindhians in January 1834 near Shikárpore, but he is himself defeated in July at Kandahar. He returns to India 1835.

1834. Ranjít Singh annexes Pesháwur. Tank and Bunnoo subdued. Ladakh reduced.

1835. Claims Shikárpur but makes no attempt on it.

1836. Ranjít restrained by English from attacking Sind.

1837. Battle of Jumrúd in which Harí Singh was slain and two guns lost.

1838. Negotiations about Sháh Shúja.

1839. Ranjít Singh dies, 27th of June.

The rupees of the next two or three years follow one of the preceding types. They were struck in Lahore and Amritsar. The latter rupees, however, from 1861 S. (perhaps 1859 S.), show another sign. I have drawn on Plate V, figs. 11, 12, 13, 14, 15, 16, and 17 to show them. The first four have a sign on the obverse, of a double branch. This is supposed to represent a peacock's tail. The one on No. 15 is a different attempt, I cannot say better. The figure on No. 16 is quite different. It represents the *árisí* or thumb mirror worn by women of loose character. No. 17 has a branch only on it. The dates are 1861, 62, 62, 62, 63, 63 and 66 respectively.

During all these years a woman named Mora, whom Ranjít Singh first saw at a dance at the Shalimár gardens at Lahore, a dancing girl, ruled Ranjít Singh. Such was the power she had over him that the two often appeared in public on an elephant in a state of intoxication. One day she laid a wager that she would do the same as Núr Jahán had done with Jahángír, get her name on the rupees of Ranjít Singh along with his. This, Cunningham says, she accomplished. " In 1811 he caused coins or medals to be struck bearing her name."* But the coins do not bear out the assertion. She put her mark on the coins. Mora means a peacock. Hence the tail of the peacock is her mark. The coins are known as Mora Sháhí rupees amongst the bankers, although the profession of the woman is always added *Mora Kanchní* (the prostitute). The mark on No. 16, the árisí is not necessarily the mark of a dancing girl. It is often worn by wealthy, vain women of all castes. There is one feature of all these rupees of Mora. The *alif* in the word *Akál* is left out. The inscriptions are the same as on fig. 2 of Pl. V. Mora was afterwards discarded. According to the Sákhí Book one of the most grievous sins a Sikh could commit was to keep a Muhammadan woman, and Mora was a Kashmírí and therefore a Muhammadan. The Sikh community stood it for a long time. But they determined to punish Ranjít for his continued debauchery. They therefore in the first place refused his offerings to the temple. Then they summoned him before an assembly of priests at Amritsar and the conqueror of the Panjáb, with folded hands and bare feet, had to acknowledge his sin and profess penitence and ask for forgiveness from the representatives of the Khálsa. They fined him a lakh and a quarter of rupees: but the wily sinner pleaded poverty and got off by paying 5,000 rupees. The fine was probably more than the gifts they had refused, and Ranjít packed off†

---

* History of the Sikhs. 2nd Edition, p. 179,

† She was the cause of all Ranjít's hesitation and folly on the occasion of Metcalfe going to the Panjáb court. It was for her sake he was always returning to Amritsar.

Mora to Pathánkoṭ and consoled himself for her loss with the charms of another woman, named Gulbegam, and other unmentionable loves. He, long before his death, became a confirmed drunkard and a more confirmed debauchee. Dr. Macgregor's book reveals many weaknesses of the Sikh conqueror.

The coins after the Mora series go on steadily. The Amritsar rupees keep to their own inscription. The Lahore rupees have the third line of obverse as on fig. 8. Figs. 17 and 18 (the latter on Pl. VI) show the 3rd line of the Amritsar rupee inscriptions. Fig. 8 shows the third line of the Lahore ones.* Pl. VI, fig. 19 is a rupee struck at *Multán Dár-ul-Amán* "the abode or gate of peace or safety." The inscriptions are the same as those on the later Lahore rupees. The leaf is along with the *mint town*, not as in the Amritsar rupees which have the leaf for the first time in 1859 S., afterwards in 1866 S. and afterwards regularly as shown in fig. 18, pl. VI. I have not been able to trace the origin of this sign.

Up to 1884 S. the rupees had the *year* on the *reverse* of the coins above the end of ب in ضرب. This year 1884 S. appears on all the coins of the next ten years and sometimes afterwards. The real year is put on the obverse as in fig. 20, pl. VI, where we have the figures ٨٩ between گوبند and فضل. I have the whole series going up to 1894 S. or rather 94 S., for the other figures are dropped in the obverses. Fig. 22, pl. VI, goes up to 1900 S. in the obverse, keeping 1884 in the reverse.

The year 1885 S. has rupees of its own without any year on the obverse. But this year is retained on the reverse of all the later Sikh coins, down to the year 1906 S., the date of the battle of Gujrát, the real date of the rupee being placed on the obverse. Fig. 25, pl. VI is of the year 94 S., but it has 1885 on the reverse. I have given it, because it has a kaṭár to the right of the *alif* in *akál.*

Fig. 21, pl. VI calls for remark. On the obverse it has the inscription of fig. 1, pl. V. On the reverse is a circle of dots in which is a leaf and *Sambat* 1884. The margin is only partly legible. *Akál* is there and so is *Kashmír.* Kashmír was conquered in 1819 A. D. = 1876 Sambat.

Fig. 22 is worthy of notice as showing an Amritsar rupee with the original distich on it as on fig. 1, Pl. V.

Fig. 23 claims separate notice. The obverse contains the inscription of No. 1, Pl. V in fine condition, every letter being visible. The reverse has two figures on it, Nának and his Muhammadan fellow wanderer Mardáná. Below these are the words "*Zarb-i-Láhore* 1885." But the real date is 93 as shown in the obverse. The origin of this retention of the years 1884 and 1885 has been explained to me thus. There is a class of faqírs who say that, inasmuch as the number of breaths a man will take is numbered when he is born, the more slowly people breathe the longer will they live. I suppose the idea may have got into Ranjít Singh's mind (he was the slave of all kinds of superstitions as well as lusts), that if he could manage to drag out one year to the extent of *ten*, his life would be all the longer, the number of years being originally fixed. This rupee, the only one I have seen of this kind, is the property of the Rev. J. Doxie who kindly made me an electrotype copy of it.

---

* In Plate VI, owing to some obtuseness of my own, I have put the reverses of coins to the left and obverses to the right, reversing the order followed in the Vth plate.

Fig. 24, Pl. VI is a Peshawar Sikh Rupee. Obverse as in fig. 1, Pl. V with year 1894. It was struck by Hari Singh and the date is that of the battle in which he lost his life 1894 = 1837 A. D. = date of battle of Jumrúd. The reverse has on it *Zarb-i-Peshâwar Sanat-i-Jalús* 1894. The date is on each side and it is the same year. It is a light rupee, weighing only 135 grs.

The remaining figures on pl. VI are those of rupees struck after the death of Ranjít Singh. He died in 1839 A. D., as we have seen 1896 Sambat. Fig. 26 is a rupee of 97 S. It has on it Om in Panjábí letters.* Mr. Lepel Griffin says that there is a rare rupee with "*Ung*" on it, which he says means God. Now I have never seen this word. I think it must be a mistake for Om, the invocation in common use in Thibet. *Ung* does not mean *God*, it only means *body*.† Thus *Devánga* means God incarnate or embodied God.

Fig. 27 is a rupee of the year 99 with a trisúl on it.

Fig. 28 is a rupee of the year 1900 S. with an umbrella on it.

Fig. 29 is of 1902 with an umbrella to the staff of which is attached a flag

Fig. 30 is of 1904. It has on it a canopy under which is the word *Sat* in Gurmukhí or Panjábí letters. Sat = the True, *i. e.*, God. Below to the left is a very peculiar knot.

Fig. 31 is of 1905. It has on it again the canopy and *Sat*. To the left is a thorny club.

All these coins from figs. 25 to 31 inclusive are of Amritsar. They have the inscriptions on the obverse varying from fig. 4 in several points and also from those in fig. 2.

Obverse—

نانک
فتح تیغ گورو گوبند سنگه فضل
سکه زد بر هر دو عالم

The cross bars are eliminated. I can assign no meaning to them, although I have no doubt they are an important part of the inscription.

---

* Panjáb Rájáhs.

† [*Om* is a Brahmanic symbol of the Deity, well-known throughout India. *Ung* is merely an anglicised spelling of it, and does not mean body, which is *ang*, Sanskrit *anga*. Ed.]

Fig. 32, Pl. VI is a Multán rupee of the year 1899 S. The rupees of Amritsar are the only ones which have the double year on them. Those of Multán and Lahore have only one year on them. This rupee has on the reverse, together with the leaf, a *thorn* mark. On the obverse is a lily. The Lahore and Multán rupees, as a rule, follow the type of the coins of 1857 A. S. in their inscriptions.

There were gold coins struck also by Ranjít Singh. I give one in Pl. IX, fig. 74. Its inscriptions will at once be recognized.

We will now go on to the Gurmukhí and other coins of the Sikhs. Guru=teacher, mukhí = mouth. Hence Gurmúkhí = language of the Guru, which is the Panjábí of the people. The characters in which the language is written are of Sanskrit origin.

Fig. 33, Pl. VII is a gold coin weighing 167 grs. It has on it, in Gurmukhí, the obverse of fig. 1, Pl. V, But the reverse is "*Wáh Gurú jí, Wáh Gurú jí, Wáh Gurú jí*," the religious cry of the Sikhs. It has no date on it and no mint. It is the only one I have ever seen in gold in Gurmukhí. Its weight indicates that it is a regular mohur and not a medal.

Fig. 34, pl. VII is a silver coin in Gurmukhí, weight 115 grs. Obverse as on obverse of 33. "*Deg, tegh, fath, nasrat i be darang yáfát aj Nának Guru Gobind Singh.*"

Rev. "*Jarb i Kashmír i Srí Akál Purukh jí.* Year 189—.* On the obverse is a sword crossing a shield, on the reverse is the leaf†. "*Sri Akál Purukh jí*" is the commencement of the "*Akál Astut*" a hymn in praise of the Timeless one, which hymn follows the *Japjí* in Guru Gobind's Granth. The words mean "hail, timeless Divinity."

These two Gurmukhí coins are in my cabinet. I got the gold one in Ludiana and the silver one in Lahore. I have as yet seen no others in any cabinet or museum.

The rest of the coins on Pl. VII require but scant notice. They are all of copper and are chiefly remarkable for their great weight and bold execution and extreme rarity. They are not old. There are full dates on two; both the same 1885. Nos. 35 and 37 are probably of the same date or near it. The hexagonal ones I thought had been hammered into that shape after coinage. But this is impossible. Since drawing the plate I have got another weighing 322 grs. There may be more. I had to pay a rupee each for these large ones, as I find the Sikhs worship them. They contain full inscriptions and the name of Nának, and that is all a real Sikh wants. The broad Muhammadan rupees of Akbar fetch a large price in the market, owing to the fact that they contain the Kalimah on one side. The inscriptions are thus—

---

* See Introduction to Trumpp's Granth. Footnote, p. xc.

† Kashmír was conquered by Ranjít in 1819 A. D. = 1876 S. So this coin was struck some time after the conquest.

Obverse of all :—*Akál Sahái, Guru Nának Jí ;*" devices various.

Reverse :—"*Jarb Srí Ambratsar jí*" and date, device a leaf. In No. 40 every letter is perfect. The dies of the rupees must have been as large as these large coins. No. 41 is a smaller sized one, of less weight, but with the same inscription, weight 175 grs.

No. 42, Pl. VIII is a bilingual coin in copper with a variety of the previous inscription. It reads obverse :—" Bábá Nának jí Sahá." Reverse : —" *Yak falús*" in Persian. Bábá = pádrí is the term of endearment whereby the Gúru is known amongst his followers. The date on this coin in Arabic figures is apparently 1900 S. ; weight 153 grs.

No. 43 has the same inscriptions, mutilated in Gurmukhí and with ornaments on the Persian side,

Nos. 44, 45, 46 are obverses of small coins struck in Amritsar. They have in them the inscription of the copper coins of Pl. VII. Their devices are respectively a kaṭár and a flag.

No. 47 is the reverse of an Amritsar coin. It has " *Jarb Srí Abratsar*" on it. The *m* is omitted. With the leaf is a star or thorn.

No. 48 has on the obverse the inscription on rupees fig. 26 &c. Reverse is " Páo ána i Nának Sháhí," a quarter anna of the Nának Sháh. The *Páo ána* is not on this specimen, but on one I got while this paper was in hand.

No. 49 has a similar obverse with date 1896 S. over the Panjábí word *san* = year. The date is repeated on the reverse, above a leaf which is surrounded by beads. There are remains of words which indicate that spelling was not a strong point with the Sikhs. It was struck at Derajat. But there is an *ain* (ع) introduced.

No. 50 is a coin of the same parts. It is given only in the reverse. Inscription is " *Zárb i Dera*" (ját.)

No. 51 is noteworthy as having *two* leaves on the obverse with the inscription going round them. It has also the *same inscription* repeated on the other side of the coin.

No. 52 has the usual obverse inscription. But the reverse one goes round a leaf and is *Jarb Amra*(*tsar*), which is the only place where the name of their capital is spelt correctly.

No. 53 is a coin of which I regret I have as yet met no large full sized one. On the obverse it has the usual inscription. But on the reverse it has " *khalasa jí, jarb Ambratsar jí*" round a leaf. It was therefore struck by the Khalasa or Khalsa. Weight 178 grs.

No. 54 is an ordinary coin as to inscriptions. But the figure of a lion shows that it is one of *Sher Singh's*. The Sikhs never were great artists.

No. 55 is a copper coin with the Persian inscription on obverse of fig. 1, Pl. V. On the reverse it has also "*Jalús Zarb Srí Amritsar*" 1897 S.

No. 56 has apparently the same on obverse as No. 55. But on reverse it has *(Zarb) Kashmír, Srí Akál* .... 1899 S.

No. 57 is the same as 55, with other words of the inscription not in 55, and on obverse the year 1881 S.

No. 58 is a rude coin with bold letters on it which are a perfect jumble. It is supposed to be the produce of a village mint.

No. 59, Pl. IX is an ordinary pice to look at, at first. But its inscriptions are extraordinary and inexplicable. I have given *four* sketches of it. Nos. 60, 61, 62 are the same coin: "*Akál devakí danaj*" is certainly the inscription. *Devakí* is a name of a man and *danaj* means a dragon.[*]

On Nos. 63, 64, 65, the same name comes in Persian with "*Akál Guru Nának jí*" in Gurmukhí letters. The reverses of all are just the ordinary Amritsar ones. No one can enlighten me as to the meaning of *Devakí* or *danaj*.

No. 66 has "*Akál Saháí*" in Gurmukhí and *Yak falús* in Persian both on one side. The other side is a smudge, but it has the leaf and therefore the mint name was there once.

No. 67. Obverse "*Akál Nának jí.*" Reverse "*Zarb i Khitta i Kashmír* 1789" or rather 20789 which are most extraordinary dates.[†] There is small flag over *khitta*.

No. 68 is a most extraordinary production. In the middle of a peculiar star is the word *Nának* in Persian characters. On the other side round a leaf is "*Zarb i Bish*" (or something like this, perhaps it is *Pathá*—it is obscure) *nkot*." The date 1894 S.

No. 69 is somewhat obscure. It contains only the ends of words. They however have not occurred on any we have yet looked at. "*Gat*" is the end of one. Some suppose that it is the end of Guru Angad's name. The device on the reverse is new, a circle with four spikes in it. The date looks all right, but it gives no help and it is in Arabic figures 1729. If however the figures are intended for Gurmukhí ones, there is a slight muddle.

No. 70 is equally obscure. The one word plain on it is "*Dheg.*" What the rest means I do not pretend to tell. Some learned Panjábís say, it is their way of spelling *Tegh* Bahádur. But *dheg* is so out-of-the-way a pronunciation for Tegh, I cannot think this is what is meant. The reverse is equally obscure. Perhaps some larger coins may be found of both these types. (The next letter after the *g* is *p*. Therefore *Dheg Pahádur* may be meant.)

---

[*] [*Devakí* is the name of a woman; Kṛishṇa's mother was called so. The inscription is probably incomplete, as shown by the absence of the final *ál* in the first line; the last line probably ended in *jí* (as in *Nának jí*). Ed.]

[†] [It should be observed, however, that 2078 is in a separate place from 9, and that by the side of 9 there is a trace of another number, apparently 5. So that 2078 and 95 would seem to be two distinct dates, of which 95 (*i. e.*, S. 1895) would be very appropriate. Ed.]

No. 71 is a more satisfactory coin. Obverse "*Sen Singh* 1898" S. The word Singh is spelt in the usual vulgar fashion, and the date in Arabic figures reads backwards 8981 like as on some coins of Hyder Ali. The reverse has a cross and a leaf and the mint in Persian, but there is not enough of its letters to enable us to make it out. It is a rough coin and the only one I have yet seen bearing a ruler's name, if No. 70 has not Tegh Bahádur on it.

No. 72 is a lump of copper. It has on one side in Persian "*Zarb i Kashmír.*" On the other "*Samwat* 1880" in a circle. This was struck four years after the conquest of Kashmír. The rough coins of Ahmad Sháh, struck in Kashmír, are exactly of this type, lumps of copper stamped and made current.

No. 73 is just such another piece of metal as No. 72. It has on the obverse in Gurmukhí "*Nának Sá*"(*h*). On reverse it has two swords, back to back, between which is a flower or dotted rays. The whole was enclosed in a double circle with dots. It is a Kashmír coin. The inscription may read *Nána(k) (zarb i) Kash(mír.)*

No. 74 is a gold mohur of 1861 S. It bears the inscriptions of the rupees figs. 26, 27 &c. The only particular thing to notice in it is that it has no alif in the word *Akál.* Thus it would seem to have been struck during the period Mora was exercising so baneful an influence over the sovereign and his court. I cannot conceive so grave a mistake happening, unless all supervision had been taken away from the mint. It was repeated year after year. It is true the coin was in Persian, and the Sikhs are not Persian readers. The hatred of Guru Gobind Singh towards Muhammadanism was so great that he prohibited the study of Persian, and positively forbade any one of his followers getting his livelihood by the use of it. And yet as we have seen all the rupees of the Sikhs are in Persian, bad Persian it is true, but Persian. Ranjít Singh's most trusted adviser was the faqír (as he in his false humility called himself) Àzíz ud Dín. Ranjít Singh could neither read nor write. He was in learning a thousand years behind his time. Hence I suppose he cared little as to what was on his coins. And his subjects cared less, provided they got good weight and good metal. That the metal is good is shown by the Nának Sháhí rupees being in constant demand for the manufacture of ornaments and from the fact that they sell for 17 annas each, on account of the excellent silver they have in them.

The coins depicted in plates VIII and IX are known as Nának Sháhí pice. They are sold in the bazaars at the rate of 56, 57, 58 couples (tagge) for the rupee or from 112 to 116. Now 6 Nának Sháhí pice weigh down 7 of our pice, and hence each one is $\frac{7}{6}$ths of one of our pice. Hence, roughly speaking, although our pice is of less weight than the Nának Sháhí pice, the market value of the latter is one half that of the former. These pice are in great demand. Their cheapness enables a man to give away at a marriage 112 to 116 coins, whereas if he changed a rupee into pice struck by the English, he would give only 64. Thus he gives more actual weight of metal and gives more in number. In Amritsar and Lahore and all centres of population in the Panjab they are in great demand. One source of gain of the money-changers is the trade in these pice. They sell them to people who are about to celebrate a marriage. Afterwards in the course of barter and exchange the coins find their way to the shop-keepers and traders who let them accumulate, until they have a rupee's worth, when they sell them to the money-changer again at reduced rates. Each money-changer's stock consists chiefly of "these pice. He has hundredweights stored away. As they come from all parts of the country, they are mixed with other odd coins. And it is from these mixed heaps of things that most of the rarest coins of the Panjáb olden times are obtained For when the coins return to the money-changer, he sets to work to sort them, and every year he gets great quantities (if he is in a favourable part of the country) of coins other than Nának Sháhí pice. It is from these men I have got all my rarest coins. They are the natural places for old coin deposits. But whereas dealers charge enormous prices for their coins, these men are content if they get three or four times the value of the coin. The stream incoming is constant. I have sometimes visited one of these places as often as twice a week and have never been disappointed yet. The silver coins however do not lodge here. They get only as far down as the sarráfs and dealers in bullion, and to them therefore I go for rupees and gold coins. Of course if no collector goes near these shops, the copper coins are melted down for the sake of the silver they contain, and the silver and gold coins are melted down for the sake of bullion or ornaments. I am sorry to add that up to the present no collection of Sikh coins exists for the people of the country in which the Sikhs once held sway.*

There is one point still more, worthy of notice, before I close this paper. I mean the ratio existing between silver and copper. I have shown above that the pice sell for from 112 to 116 per rupee and that they are heavier, by one-sixth, than an English struck pice which sells at 64 per rupee. At this rate silver is about 72 times dearer than copper. I am inclined to think this is the ratio which obtained in olden times. If so, my calculations with respect to the income of Akbar will have received strong confirmation.

---

* [Since the above was put in type, the Panjab Government have purchased the whole of Mr. Rodgers' Sikh coins for the Lahore Museum. Ed.]

Additional Note.

There are three transliterations which demand explanation, those on the Dera *Ghází* Khán coins. In my paper the coin I have given was ascribed, according to the most learned Panjábí I could get hold of, to *Tegh Bahádur*. I confessed in my paper that I was not satisfied with this reading. After my paper was sent off, I again visited the bazaar, in the hope that I might find some clue to the deciphering of this to me then unique coin. I got without any difficulty no less than 25 coins of this description, and I at once began to compare them with each other. Then I found that one coin had a little of the top line, another a little of the bottom one, a third a little of the right middle line, and a fourth a portion of the left of the coin, and thus I found out that the coins were struck at *Dera Ghází Khán*. The other transliterations require no notice.

Since this paper was in the press, I have found out rupees bearing the name of *Rám*, struck in *Lundí* and also *Gurmukhí* and *Sanscrit*. I have also obtained *one* rupee, struck at *Jhang*, and several struck at *Pind Dádan Khán*. I have also seen some gold mohurs in the Lahore Museum struck in Gurmukhí with the same dies as some of the commonest pice, apparently. I have also found some rupees of years not mentioned in the paper, notably one of Multán struck in the year of the capture of that city A. D. 1818 = A. S. 1875, and one of Amritsar struck in 1856 A. S. The subject is not yet exhausted, long and prosy though this paper has been.

The whole of the Sikh coins, gold, silver and copper, in my collection, have been purchased by the Panjab Government for the Lahore Museum. Thus two subjects I had in view have been accomplished. (1) An account of the coins of the Sikhs. (2) The possession by the Provincial Museum of the coins of its own province. Of course there should be in the Imperial Museum at Calcutta a duplicate collection.

INDEX

TO

JOURNAL, ASIATIC SOCIETY OF BENGAL, Vol. XLIX,

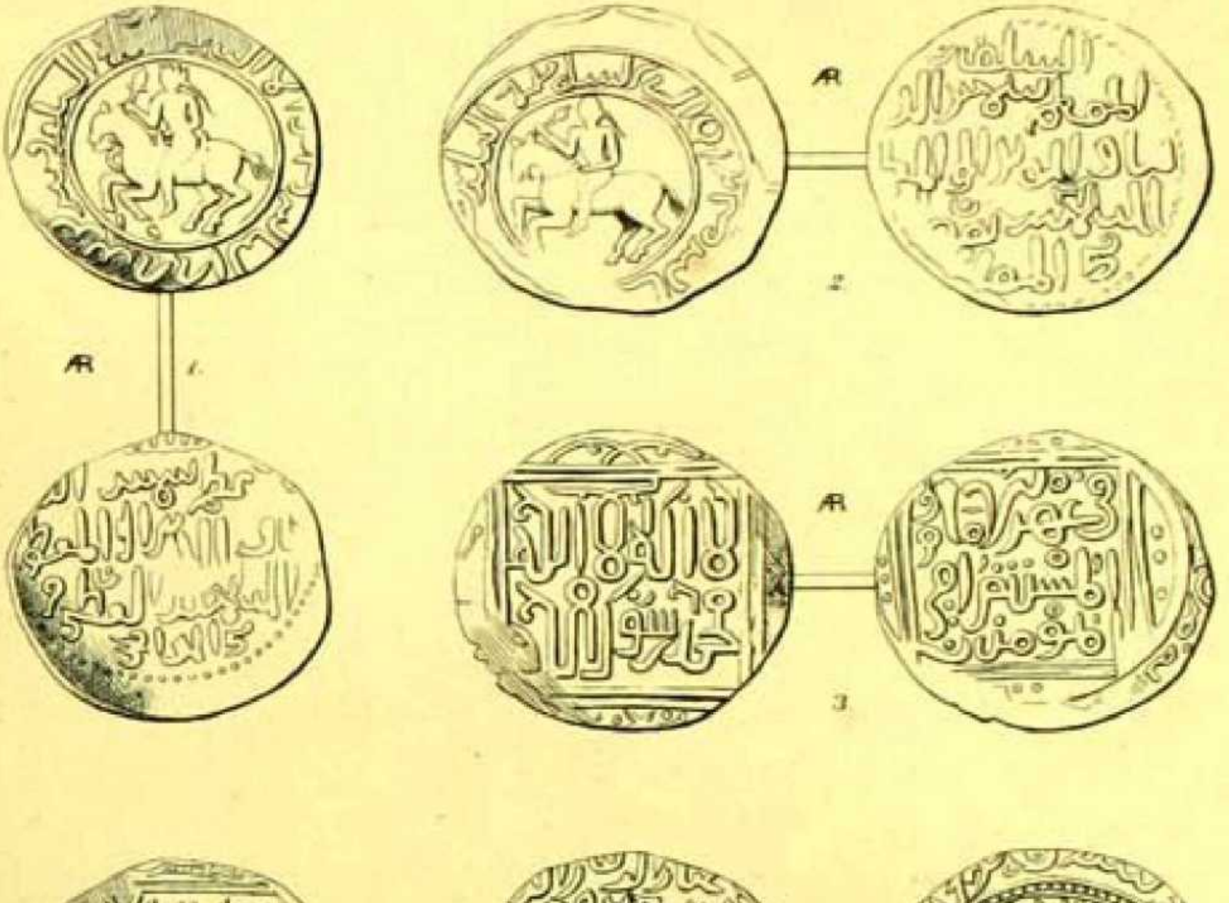
Part I, for 1880.

AFGHANS along the Route of the Tal Chotiali Field Force, pp. 91, 141
Agni-mitra, coins of, pp. 21, 22, 25, 87, 88
Ahichhatra, the modern Rámanagar, ancient capital of North Panchálá, p. 21
Akbar, copper coins of, p. 213
Anu-mitra, coins of, pp. 21, 26
Artesian wells at Pondicherry, p. 7
Astronomy of the Jains, pp. 107, 181
Ayu-mitra, coin of, pp. 27, 139.

BHADRA-GHOSA, coins of, pp. 21, 22, 24, 88, 89
Bhánu-mitra, coins of, pp. 21, 22, 25, 87, 89
Bhuila, site of the ancient city of Kapilavastu, p. 21; coins of the Mitras found at, p. 21
Bhúmi-mitra, coins of, pp. 22, 26, 87
Branfill, Lt.-Col. B. R., Description of the Great Ṣiva Temple of Gangai Kondapuram, p. 1.—Rude Megalithic Monuments in North Arcot, p. 8
Buddhist Ruins, clay discs found in, p. 127, clay seals found in, p. 135; copper coins, p. 138

CARLLEYLE, A. C., Description of coins of the Mitra dynasty, pp. 21, 87
Carnac, H. Rivett, coins of Mitra dynasty belonging to, p. 21; memorandum on coins of the Sunga dynasty, p. 87; on clay discs, p. 127; note on Buddhist copper coins, p. 138
Chenji or Sanji Koṭṭai, a remarkable precipitous bluff rock, pp. 5, 6
Chittámúr, handsome sculptures at, p. 6
Civilization of Afghán Tribes, p. 153
Classification of Hindí roots, p. 33
Clay Discs found in Buddhist ruins, Memorandum on, p. 127
Clay seals, Buddhist, p. 135
Coins of Kashmir, p. 11; of Chumba, p. 11; of the Mahárájás of Kángṛa, pp. 10—15; of Rájás of Kábul, p. 11; of Sámanta Deva, pp. 11, 12; of Susarma Chandra, p. 11, of Prithví or Pithama, p. 11, of the Sunga or Mitra dynasty, pp. 21, 87; found at Rámanagar or Ahichhatra, p. 21, at Bhuila, p. 21; of Ghiáṣ-ud-dín and Mu'az-ud-dín bin Sám, p. 28; supplementary to Thomas' Chronicles of Paṭhán kings, pp. 81, 207; Buddhist copper, p. 138; copper of Akbar, p. 213
Coorgs, tombs of, p. 9
Cunningham, General A, list of Rájás of Kángṛa, p. 12

DERIVATION of Hindí roots, p. 33
Description of the Great Ṣiva Temple of Gangai Koṇḍapuram, pp. 1—7; of megalithic Monuments in North Arcot, pp. 8—10
Dhruva-mitra, coins of, p. 28
Distribution of Afghán Tribes, p. 141



Drawn Lith & Print by W. Newman & Co
Calcutta

EARLY MUHAMMADAN COINS OF BENGAL.

GANGAI Koṇḍapuram, Great Ṣiva Temple at, p. 1
Ghiáṣ-ud-dín, coins of, p. 28

HINDÍ Roots, collection of, pp. 33—81
History of Kashmír, Muhammadan period, p. 17
Hoernle, Dr. A. F. Rudolf, collection of Hindí roots, p. 33

INDO-SCYTHIAN princes of Kábul and Kángṛa, p. 10, coins in the Lahore Museum, p. 13
Indra-mitra, coins of, pp. 21, 23, 27, 89
Inscription, on Lanka Island, Wular Lake, Kashmír, pp. 16, 20
Iralabanda Bápanattam, tomb-field at, p. 8

JÁIN Astronomy, pp. 107, 181
Jalandhar, Rájás of, p. 10
Jarrett, Major H. S., Note on an Inscription on Lanka Island in Kashmír, p. 16
Jayamba Mahárájá, founder of the Temple at Mailam, p. 6

KAMALA-KANNI-Y-AMMAM, a goddess, carved stone dedicated to, p. 5
Kamuda Sena, coins of, p. 138
Kángṛa, fort and coins of, p. 10
Kashmír coins of, p. 11; inscription found on Lanka Island, p. 16; Muhammadan history of, p. 17
Kistvaen in North Arcot, p. 8.

LANGUAGE of Afghán Tribes, p. 163
Lanka Island in Wular Lake, Kashmír, Inscription found on, p. 16
Letters, Tamil, on old pottery, p. 9

MAHMUD, conquers Kángṛa, p. 10
Megalithic Monuments in North Arcot, pp. 8—10
Mitra dynasty, coins of, pp. 21, 87; list of kings of, pp. 23, 28
Mu'az-ud-dín bin Sám, coins of, p. 28
Muhammad Aẓam, author of Persian History of Kashmír, p. 17

NAGARKOṬ, fortress conquered by Mahmúd, p. 10
North Arcot, megalithic Monuments in, pp. 8—10

PANCHÁLÁ, ancient capital of, p. 21
Paṭhán kings, supplementary coins of, pp. 81, 207
Perumukkal, stronghold near Tindivanam, pp. 6, 7
Pháguni-mitra, coins of, pp. 21, 22, 26, 87, 88.
Píthama, see Prithví
Polity of Afghán tribes, p. 149
Pondicherry, artesian wells at, p. 7
Ponniyár, stone circles at, p. 7
Prithví, coins of, pp. 11, 14
Pushpapura or Pátaliputra, capital of the Mitra dynasty, p. 21

RÁJÁ Taranginí, History of Kashmír, p. 16
Rájás of Kángṛa, pp. 10—12; of Trigartha, p. 10; of Jalandhar, p. 10, of Kábul, p. 11
Ramadatta, coin of, p. 87
Rámalinga-pillai-salai, a remarkable college building, p. 2
Rámanagar or Ahichhatra, ancient capital of North Panchálá, p. 21
Rodgers, Chas. J., coins of the Mahárájás of Kángṛa, p. 10; Coins supplementary to Thomas' Chronicles of Paṭhán kings, pp. 81, 207; copper coins of Akbar, p. 213
Roots, Hindí, p. 33.

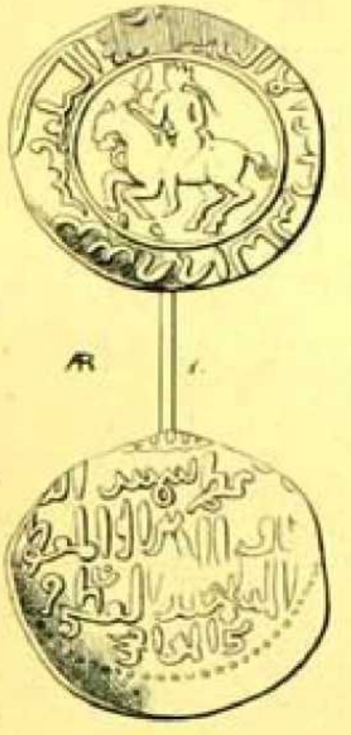
SÁMANTA Deva, coins of, pp. 11, 12, 14
Sanji-Kottai, see Chenji
Satya-mitra, coin of, p. 138
Saya-mitra, coin of, p. 139
Spindle Whorls, Memorandum on, p. 127
Stülpnagel, C. R., Description of coins of Ghiás-ud-dín and Mu'az-ud-dín bin Sám, p. 28
Sunga dynasty, coins of, pp. 21, 87
Súrya-mitra, coins of, pp. 21, 24, 28, 87, 89
Súryaprapñapti, pp. 107, 181
Susarma Chandra, coins of, p. 11

TAMIL letters on a fragment of a bowl, p. 9
Tanjore, great Temple at, p. 1
Temple, Lieut. R. C., Remarks on the Afgháns found along the Route of the Tal Chotiali Field Force, pp. 91, 141
Terra Cottas, volcano-shaped, p. 137
Thibaut, Dr. G., on the Súryaprajñapti, pp. 107, 181
Tombs at Iralabanda in North Arcot, p. 8; of the Coorgs, p. 9
Trichinopoli district, remarkable places in, pp. 1—7
Trigartta, Rájás of, p. 10

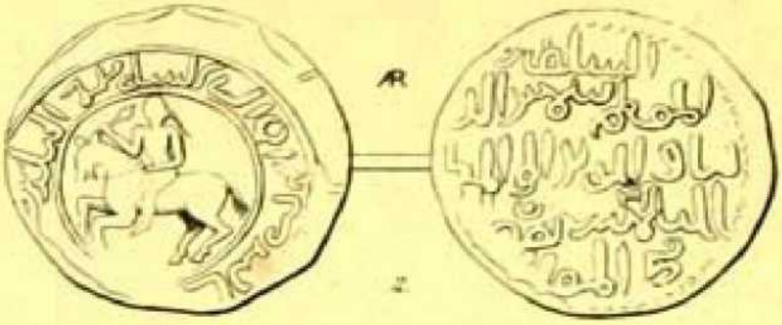
VAISÁKHA Deva, coins of, p. 138

WELLS, artesian near Pondicherry, p. 7
Wular Lake in Kashmír, pp. 16, 20

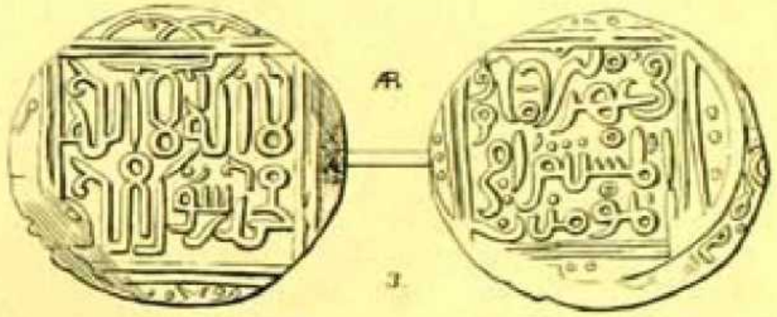
Zayn Ịbád, of Kashmír, p. 16
Zayn-úl-Ạábidín, Sultán of Kashmír, pp. 16, 19



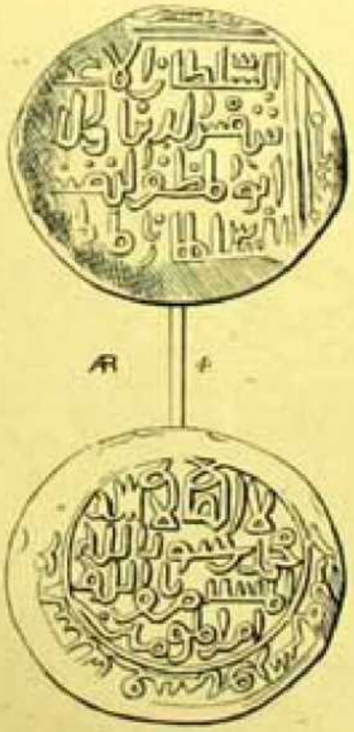
1.



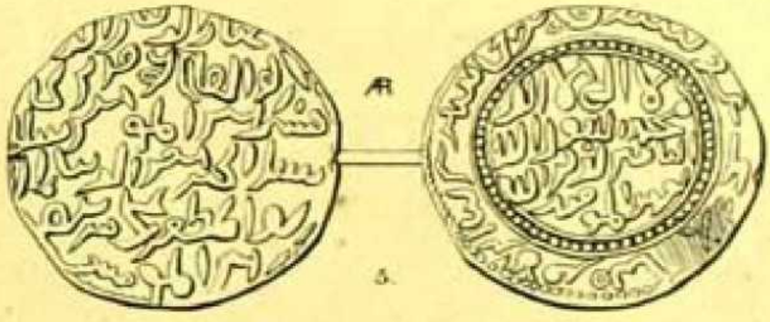
2.



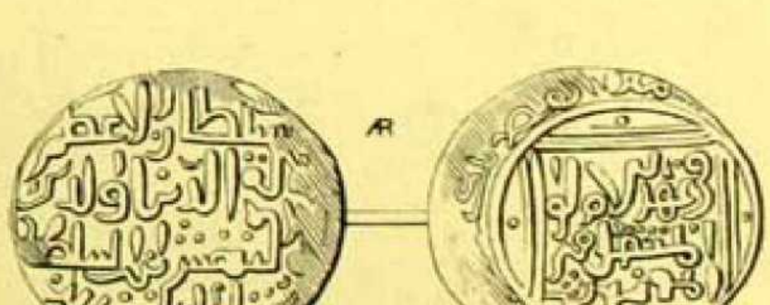
3.



4.



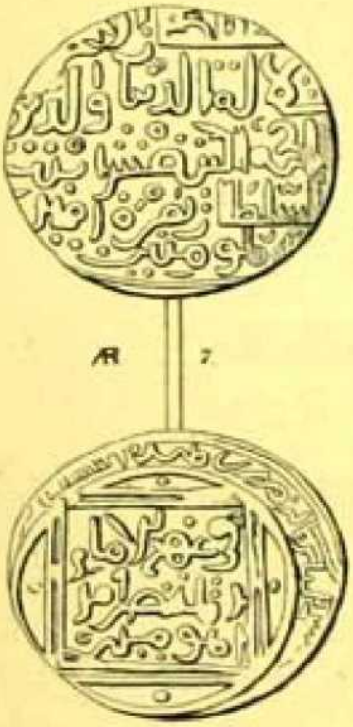
5.

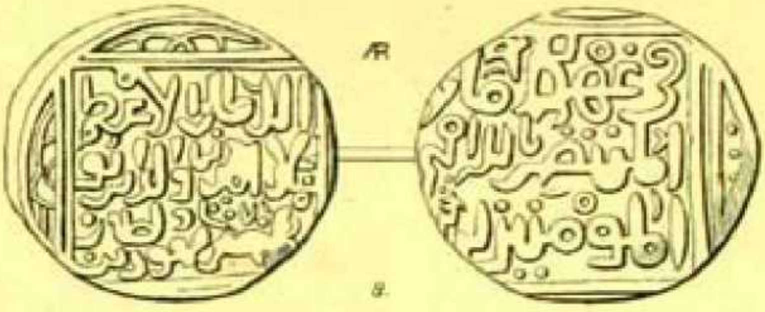


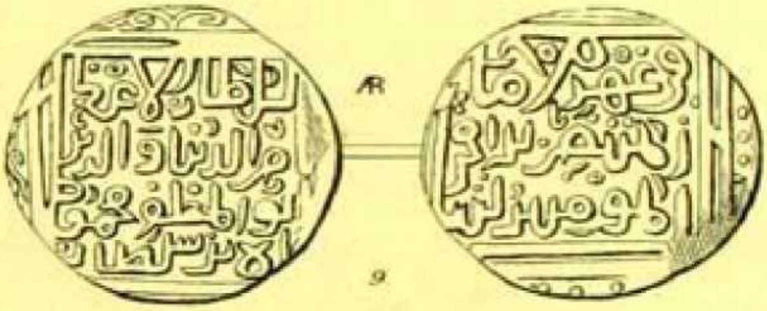
6.

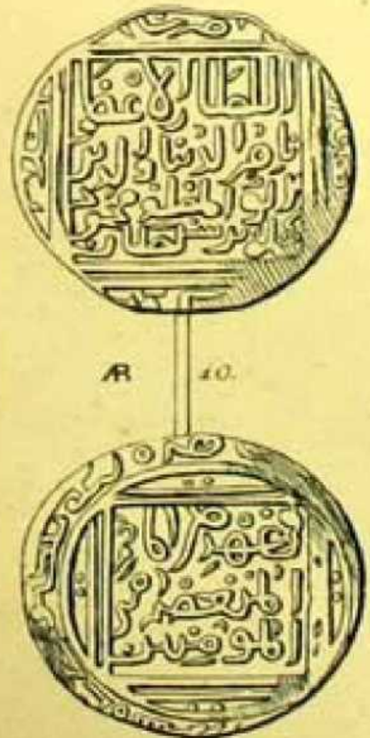
Drawn Lith. & Print by W. Newman & Co. Calcutta

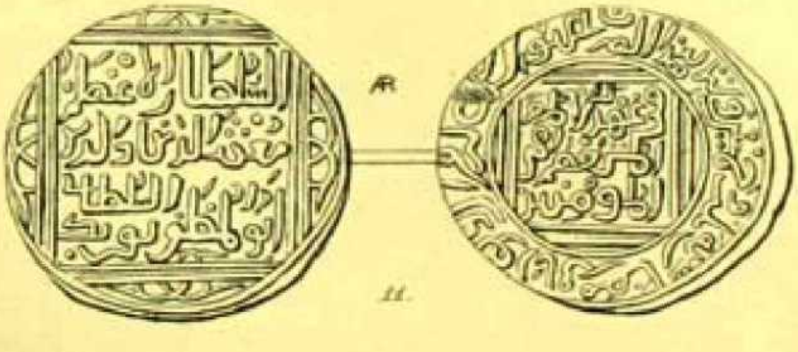
EARLY MUHAMMADAN COINS OF BENGAL.

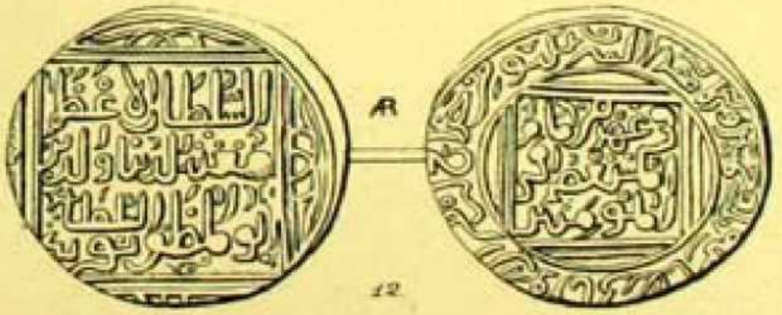










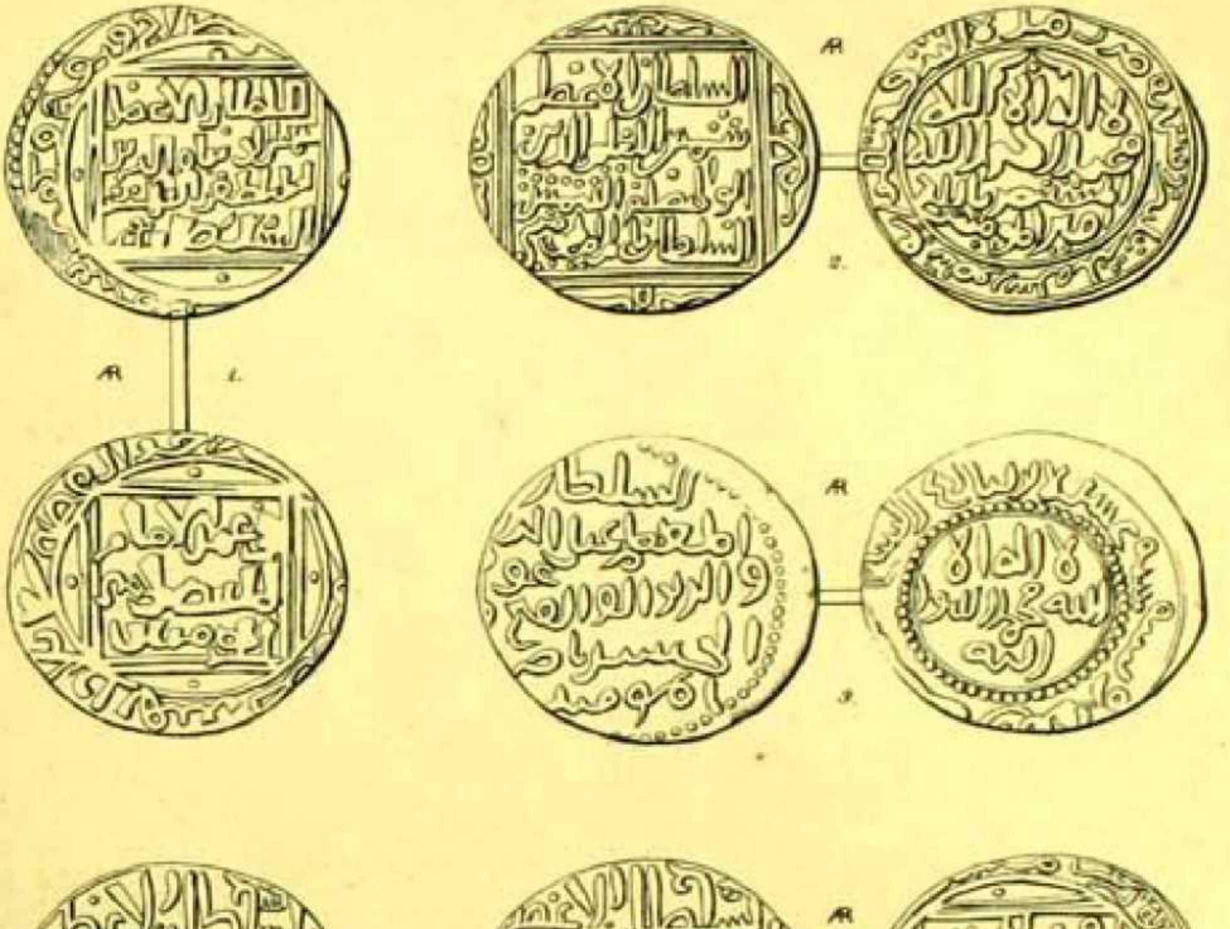


Drawn, Lith. & Printed by W. Newman & Co. Calcutta.

EARLY MUHAMMADAN COINS OF BENGAL.

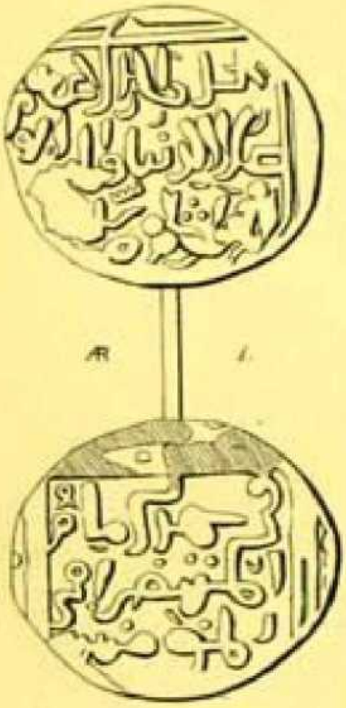
Journal, As. Soc Bengal, Vol. L. Pt. 1, 1881.

Pl. III.

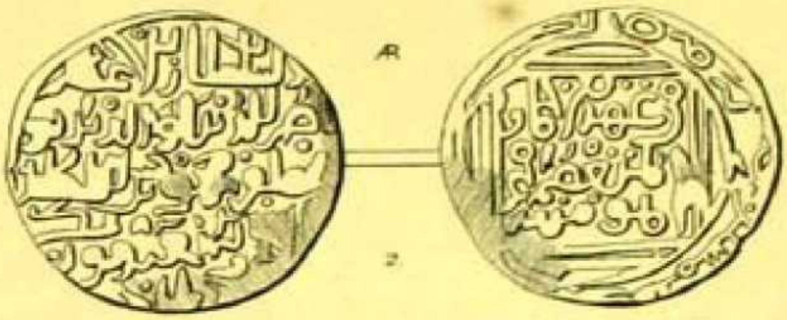


Drawn, Lith. & Printed by W. Newman & Co. Calcutta.

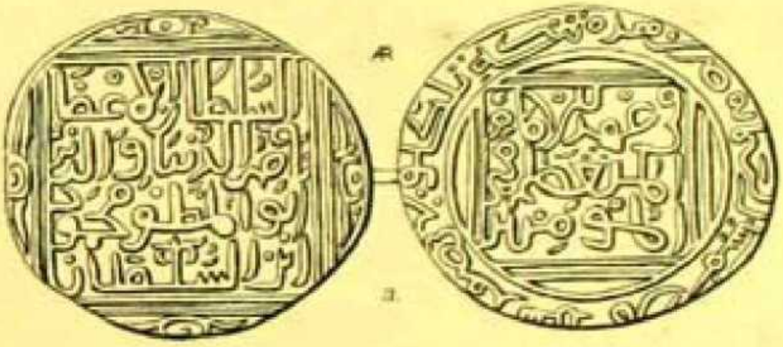
EARLY MUHAMMADAN COINS OF BENGAL



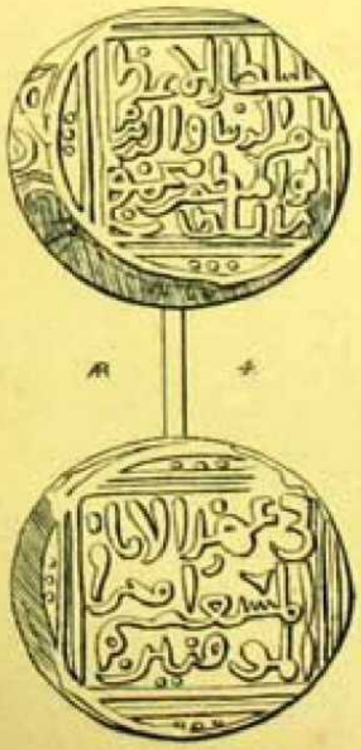
AR 1.



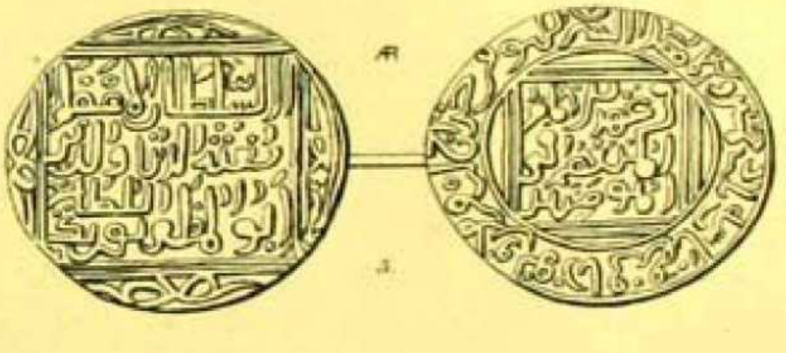
AR 2.



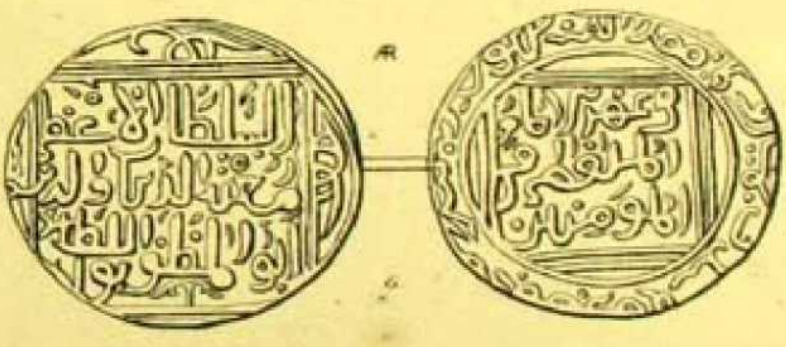
AR 3.



AR 4.



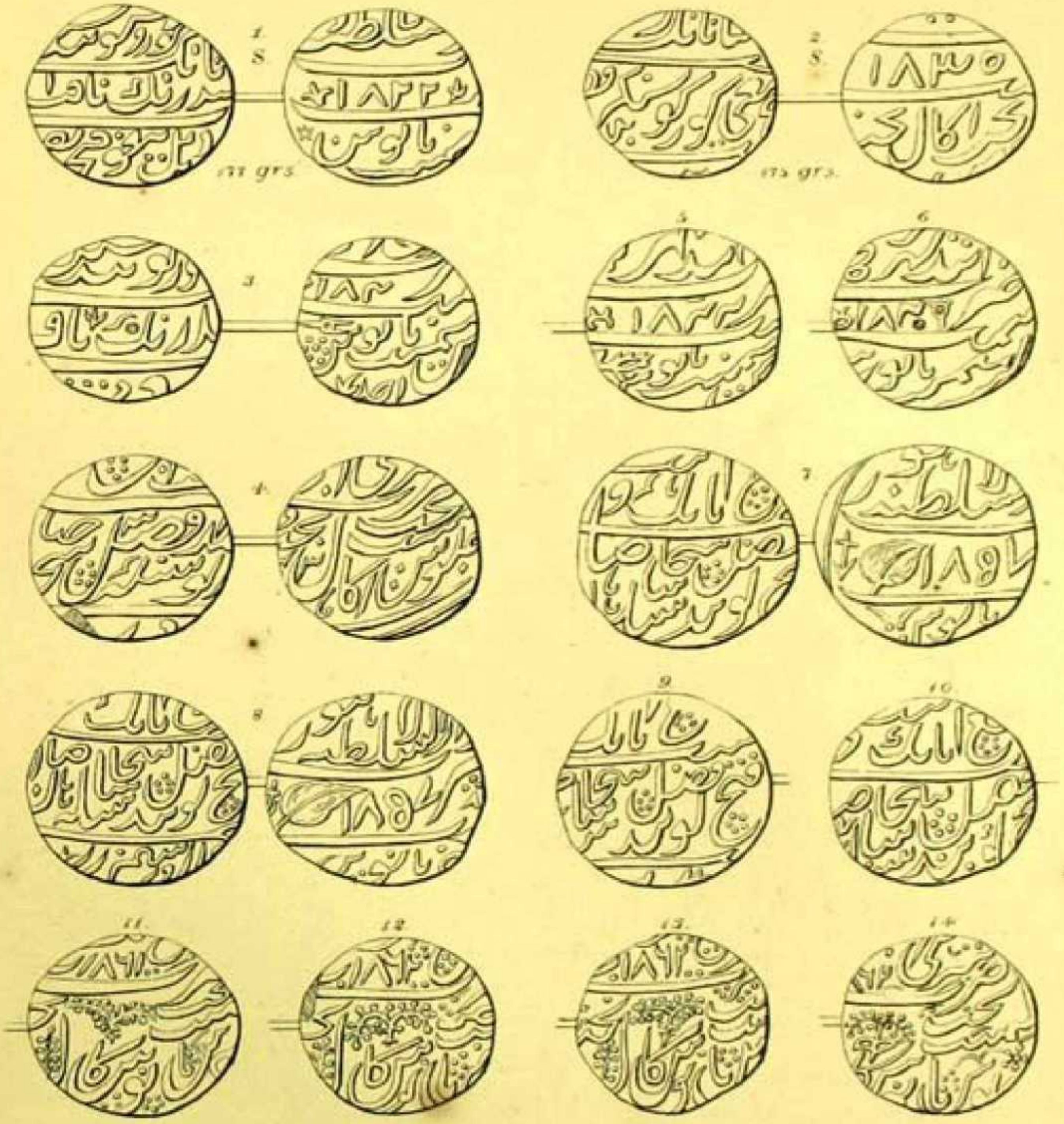
AR 5.



AR 6.

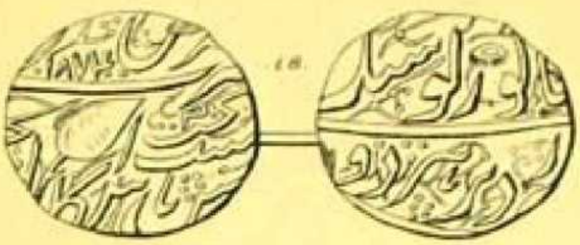
Drawn, Lith. & Printed by W. Newman & Co.

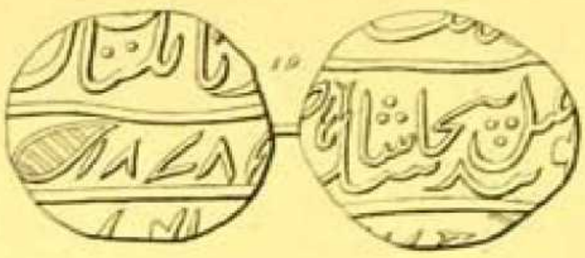
EARLY MUHAMMADAN COINS OF BENGAL.

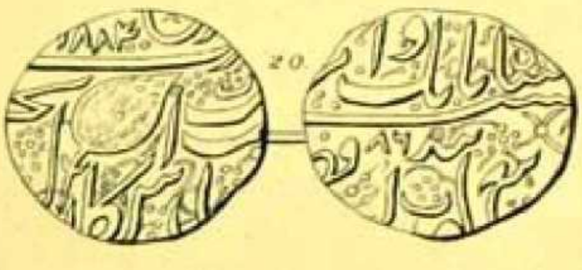


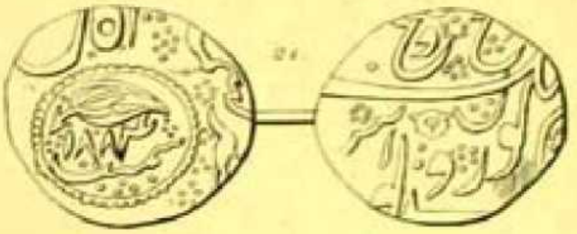
Chas. J. Rodgers del.
W. Newman & Co. Imp.

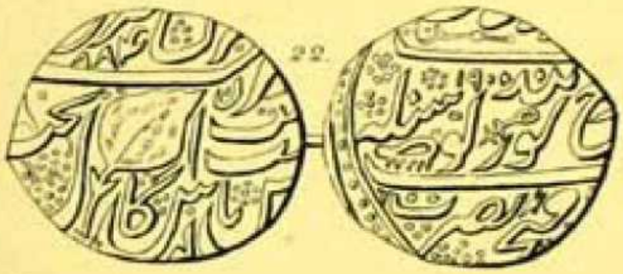
RUPEES OF THE SIKHS.

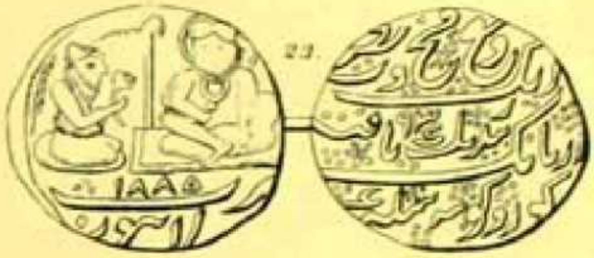

18.

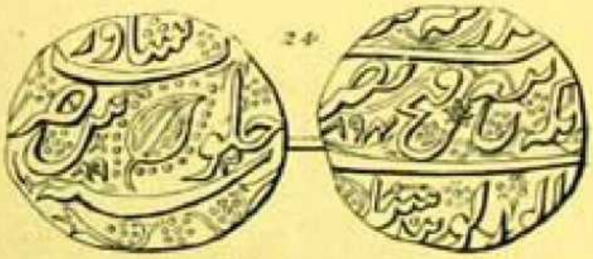

19.

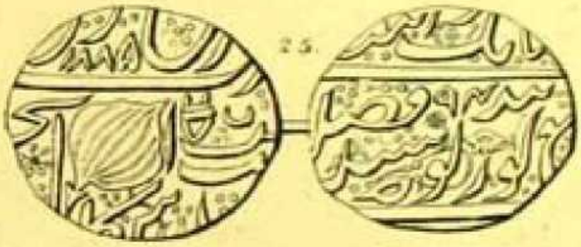

20.


21.

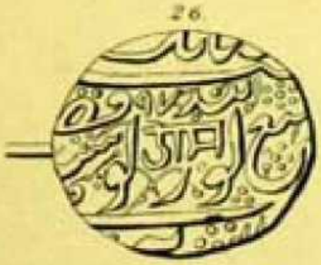

22.


23.

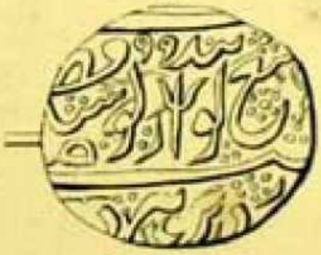

24.


25.

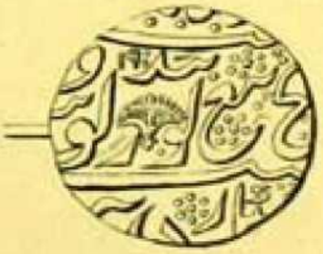
26.



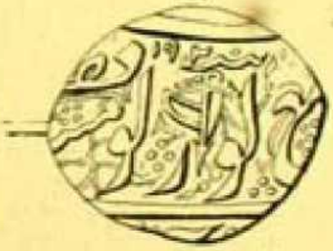
27.



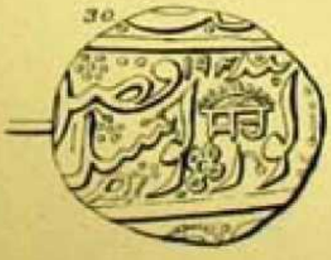
28.



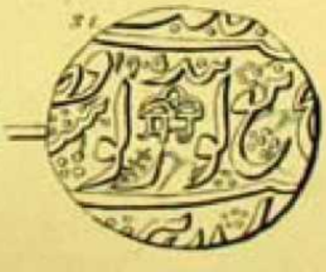
29.

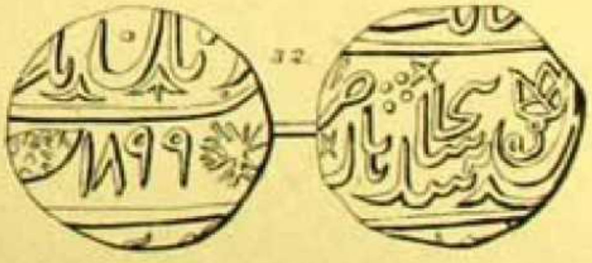


30.



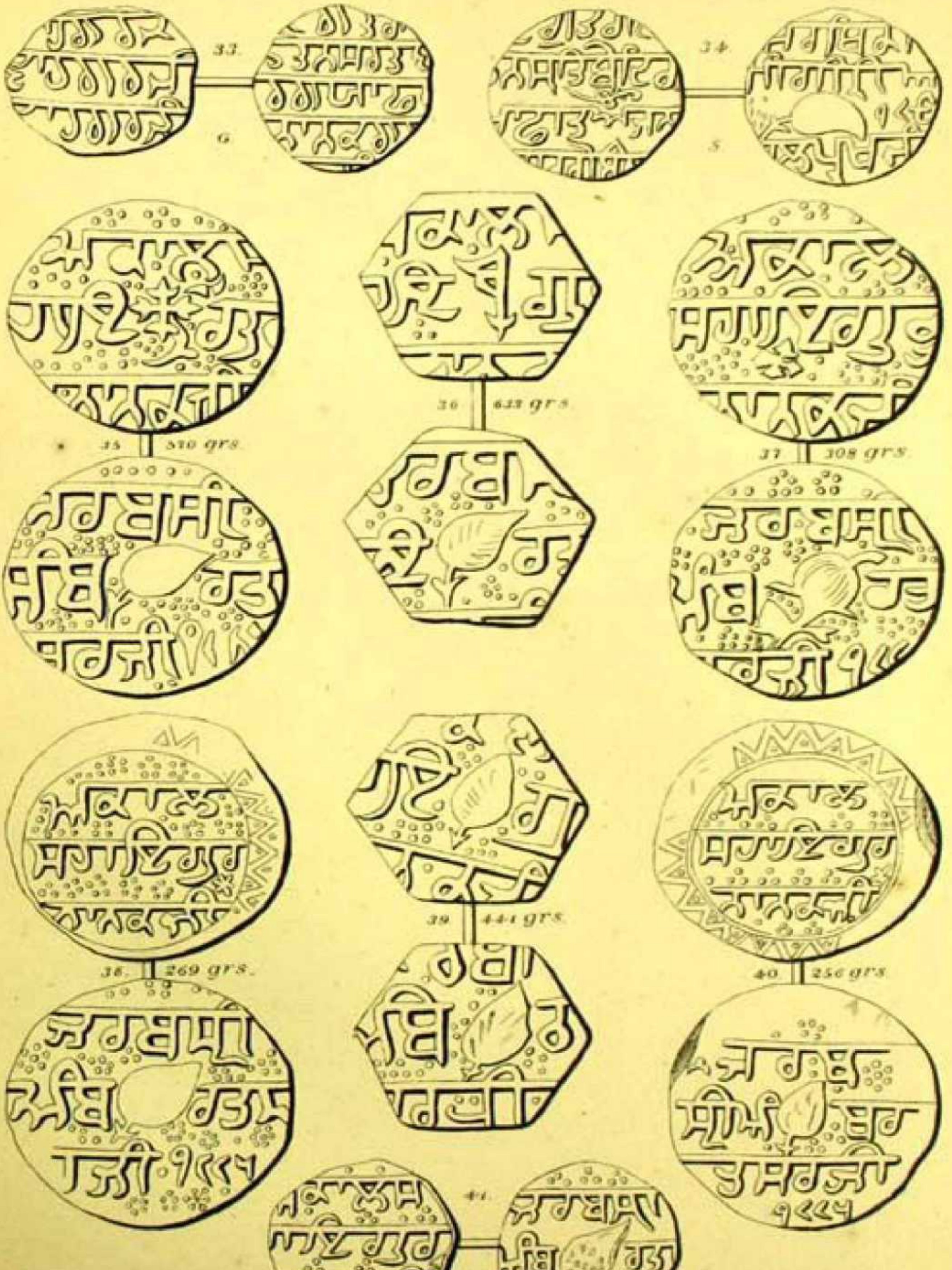
31.




32.

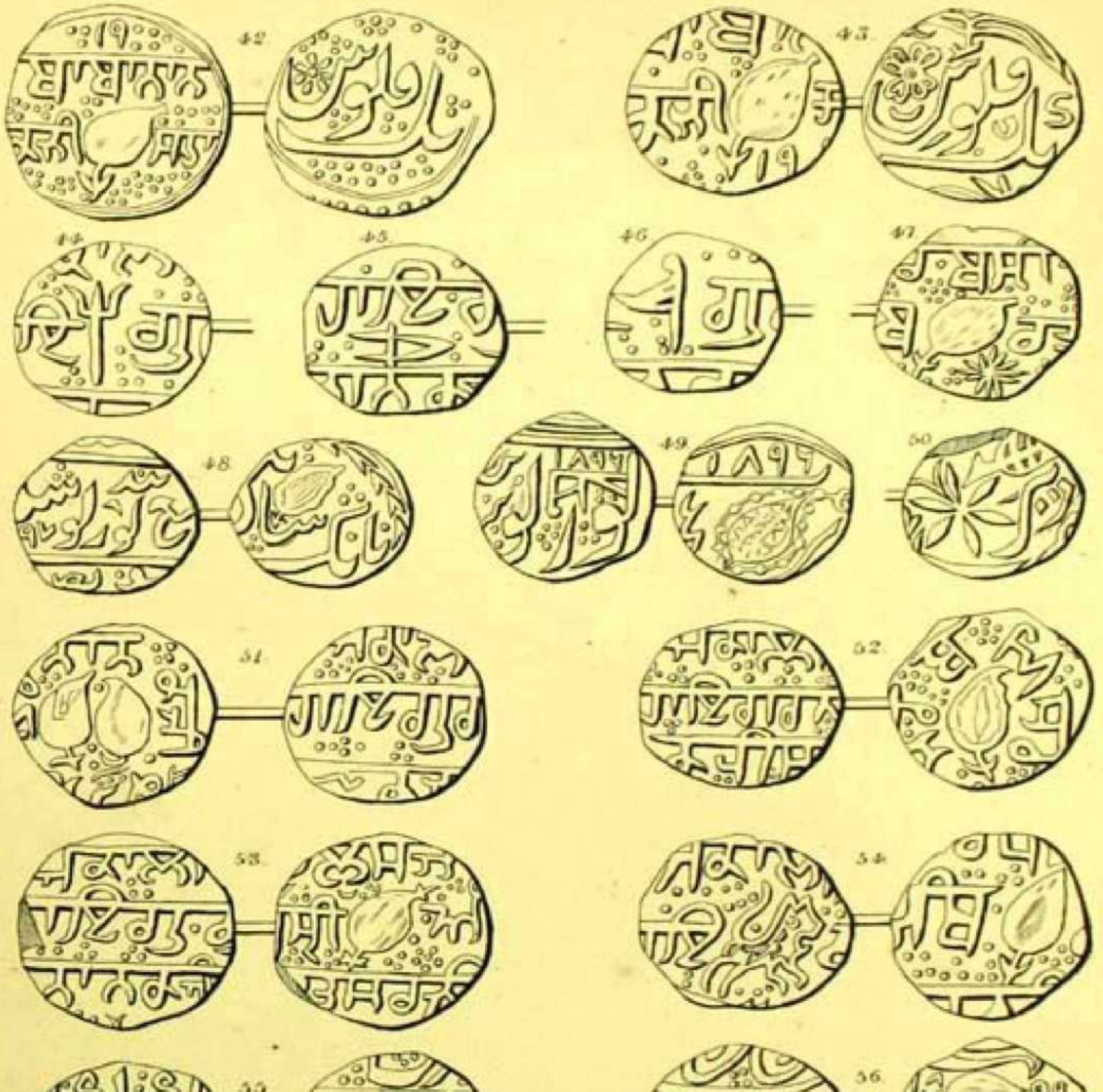
Chas. J. Rodgers, del. W. Newman & Co. Imp.

RUPEES OF THE SIKHS.


33.
6
34.
5
35 310 grs.
36 623 grs.
37 308 grs.
38. 269 grs.
39. 441 grs.
40. 256 grs.
41.
133 grs.

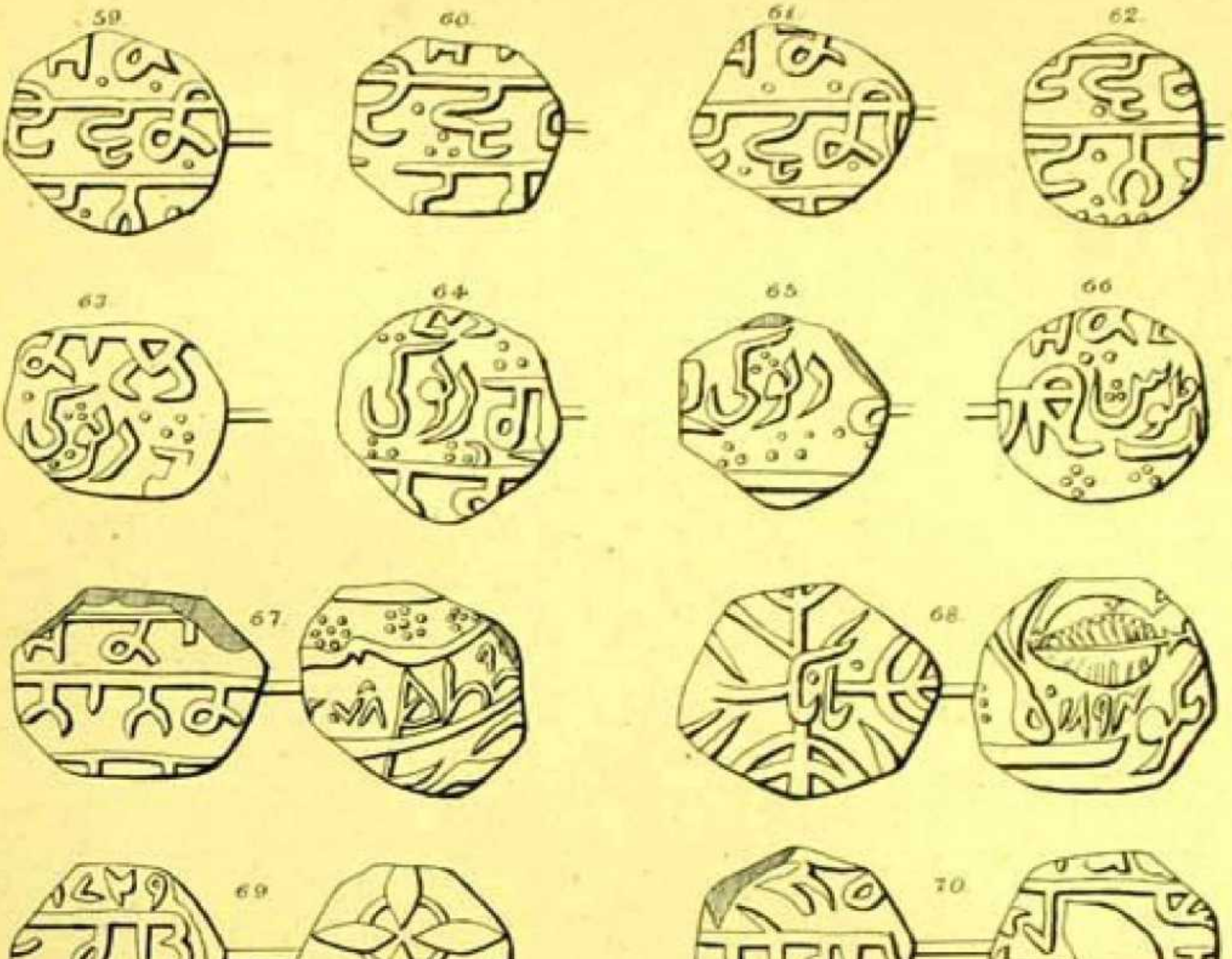
C. J. Rodgers del. W. Newman & Co. Imp.

GURMUKHI COINS OF THE SIKHS.



C. J. Rodgers del. W. Newman & Co. Imp.

MISCELLANEOUS COINS OF THE SIKHS.



C. J. Rodgers del. W. Newman & Co. Imp.

MISCELLANEOUS COINS OF THE SIKHS.

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

◆

Part I.—HISTORY, LITERATURE, &c.

No. II.—1881.

On the Coins of Charibael, king of the Homerites and Sabæans.—By Major W. F. Prideaux, F. R. G. S., *Bombay Staff Corps.*

(With a Plate.)

In the year 1843 M. Arnaud, a French traveller, discovered at Ṣan'á and the neighbouring cities of South Arabia a considerable number of Himyaritic inscriptions, which were subsequently collected and published by M. Fresnel, the distinguished Arabic scholar, in the *Journal Asiatique* (IV série, tome V, pp. 211, 309 ; VI, p. 169). On some of these inscriptions were found the names of two ancient kings called Kariba-êl, one of whom it was tolerably evident, must be identical with the monarch of that name who is mentioned in the twenty-third chapter of the *Periplus of the Erythræan Sea*, as having been the paramount sovereign (ἔνθεσμος βασιλεύς) of the two contiguous tribes of the Homerites and the Sabæans at the time that work was compiled The name of one of these princes occurs in one passage only (Fres. XXIX) where he is described as *Kariba-êl Bayyân*, son of *Yatha'-amar*, *Makrab* of Sabà ; while the other is mentioned in three inscriptions, first (Fres. XI) as *Kariba-êl Wattâr*, son of *Dh*amar-'ali, Makrab of Sabà ; secondly (Fres. LVI), at the end of a long list of princes, as *Kariba-êl Wattâr* ; and thirdly (Fres. LIV) as *Kariba-êl Wattâr Yehan'am*, king of Sabà and Raidân, son of *Dh*amar-'alî Bayyân. A comparison of these names and titles with the text of the *Periplus* affords sufficient evidence that the king mentioned in that work is identical with the second of the princes named in the inscriptions. The writer of the *Periplus* states three facts regarding Kariba-êl, firstly, that his metropolis was at *Saphar;* secondly, that he was the sovereign of the contiguous tribes of the Homerites and the Sabæans; and thirdly, that, by means of embassies and presents, he established terms of friendship with the Roman Emperors. Saphar is universally acknowledged to be the town of *Zh*afâr, otherwise known as Haql-Yaḥṣib,* a name which it probably owes to another ancient king of the Homerites, El-sharaḥ Yaḥṣib, who is mentioned in one of the inscriptions preserved in the British Museum (No. 33). Al-Hamdânî, the historiographer of Yemen, calls Raidân, قصر المملكة بظفار, the castle of the kingdom at *Zh*afâr, the seat of government and the residence of the kings The original seat of the Sabæan monarchy was at Mârib, but after the expedition of Ælius Gallus and the consequent ruin of that city, it seems probable that the inferior tribe of Ḥimyar, which is always represented in Arabian legends as an offshoot of Sabà, rose to power and fixed its capital at the town of *Zh*afâr. It is evident from the text of the *Periplus* that at the time of the compilation of that work the Homerites were the ascendant tribe, and it seems reasonable to conclude that Kariba-êl was their chief. The original designation of himself and his father was *Makrab* of Sabà, an inferior title to that of *Malik,* which he afterwards bore, and one which apparently corresponds to the Greek *τύραννος*, under which title we find Cholaibus, the subordinate chief of the district of Mophareitês, mentioned in the twenty-second chapter of the *Periplus.* After he had brought the united kingdoms under his sole authority, he assumed the exalted epithet of *Yehan'am*, struck coins, as we shall presently see, at his castle of Raidân and consolidated his power by an alliance with the Cæsar of Rome.

The name of Kariba-êl belongs to the regular system of Himyaritic nomenclature, and its probable signification is *El has strengthened.* The root *karab* occurs in other Himyaritic names, such as Tobba'-karib, Ma'adikarib, and is also found in the title *Makrab,* a designation which would seem to have a nearer analogy to the *Podestà* of the mediæval Italian cities than to the *tyrannus* of the Greeks. The root is also found in the Hebrew *Kerûbîm*, those mythical creatures which are represented in the Assyrian sculptures as colossal winged bulls with human heads† and whose strength is asserted in the Bible to be sufficient to support the Deity Himself (2 Sam. xxii, 11; Ps. xviii, 10). The surname *Wattâr* is not uncommon in the lists of the Sabæan kings and is referable to a root which appears primarily to convey the idea of *uniqueness* and thence of excellence. It is cognate with the Biblical name of Yether or Yethro (Jethro). The further epithet of Yehan'am which was subsequently assumed by Kariba-êl is derived from the causative or Hiphil form of the root נעם and may

* D. H. Müller, *Die Burgen und Schlösser Südarabiens*, Wien, 1879, p. 37.

† Lenormant, *Les Origines de l' Histoire*, 1880, pp. 112, sqq.

be rendered *the bestower of favour*, a designation which would not be inappropriate to one who had secured the friendship of Rome by the means mentioned in the *Periplus*.

Of the extent of Kariba-êl's dominions we have no exact means of judging, but they probably included the greater part of that country which is now, and has been for many years, known as El-Yemen, for it may not be uninteresting to mention that the division of Arabia into El-Yemen *the south*, and Esh-Shâm, *the north*, is of very early date. In one of the, inscriptions discovered by M. Halévy at Berâqish in South Arabia, reference is made to an altercation between the inhabitants of the two divisions (בין זימנת ושאמת, Hal. 535, 13). That part of Kariba-êl's kingdom which comprised the south-western extremity of the peninsula was called Mophareitês and was under the government of the *tyrannus* Cholaibus. This is known to the Arabs as the Beled el-Ma'âfir (بلد المعافر)* and is described in Al-Hamdânî's geographical work, the *Jezîret el-'Arab*. The name of the chief, *Kulaib*, is a diminutive form of *Kalb*, one of the principal tribes of ancient Arabia, and mentioned as a personal designation in more than one inscription (Hal. 396, 1 ; 662, 1). The authority of Kulaib extended over a considerable portion of the opposite African coast (*Periplus*, § 16). Ḥa*dh*ramaut, however, still existed as a distinct kingdom and was ruled over by a king called Eleazus, a name which under the form of El-'azza (אלעז), is frequently mentioned in the Himyaritic inscriptions (Hal. 77, 1 ; 208, 1 ; 231, 7 ; 643, 2). The principal city of Ḥa*dh*ramaut was *Sabbatha*, the *Sobota* of Pliny, the שבות of the British Museum inscription No. VI. 6, and the شبوة of Al-Hamdânî.

The period at which Kariba-êl reigned must be determined by the date of the Periplus. Some years ago I examined this question with considerable care, and for the reasons alleged by me in a paper published in the Transactions of the Society of Biblical Archæology (Vol. II, p. 16), I have come to the conclusion that Kariba-êl must have reigned about the year A. D. 75. I believe that this date agrees with that which is now generally received by scholars, and should it differ, it must be considered that the writer of the Periplus may sometimes refer a fact to the period of his voyage, and sometimes to the time at which he was working up his notes of travel into the form in which they now exist.

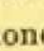
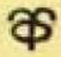
Having said so much by way of introduction, it remains to add a few words upon the more immediate subject of my paper. A few months ago I received from Aden a few silver Himyaritic coins, among which I was pleased to discover two which I had no hesitation in attributing to Kariba-êl Wattâr Yehan'am. The following is a description of the coins, which I have brought with me for exhibition this evening :—

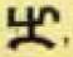
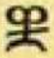
---

* D. H. Müller, *Reise nach Constantinopel*, Wien, 1878, p. 10, &c.

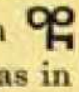
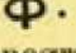
KARIBA-ÊL WATTÂR YEHAN'AM.

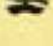
(The inscriptions are written in Hebrew characters, as Himyaritic type is not procurable.)

1. (Plate X). *Obv.* Head to right, beardless, the hair arranged in three stiff corkscrew curls; round it the inscription כרבאל יהנ and the monogram ; below head רידן, to right .

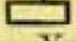
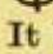
Rev. Head as in obv.; above the head the monogram , behind the head the monogram ; the right side of the coin *in grenetis.*

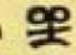
Ar. Size: ·6 in. Weight: 23·673 gr. = 1·534 grammes.

2. *Obv.* Head as in No. 1; around head the inscription כרבאל יהנ and the monogram ; below head רידן, to right .

Rev. Head as in No. 1; behind head the monogram ; the right side of the coin *in grenetis.*

Ar. Size: ·58 in. Weight, 24·49 gr. = 1·587 grammes.

On the obverse the name of the king and the first three letters of his epithet יהנעם are given, below is the name of the mint-place *Raidân.* I am unable to explain the signification of the monogram  which is also found in two other coins in my possession (one of 'Umdân Yehaqba*dh* and one of Yada'-äb Yenâf) or of the symbol  which is found on all the Raidân coins of this type that I have seen. It has also been discovered on some of the sculptured Himyaritic inscriptions.

The monogram  or which appears on the reverse can be resolved into the letters ותר *Wattâr,* the surname of Kariba-êl. The other monogram on the reverse of No. 1 I am unable to explain.

It was my original intention to have added a few remarks upon the subject of the Himyaritic coinage generally, but within the last few days I have been favoured with the proof-sheets of a paper entitled *Neue himjarische Münzen* by Dr. J. H. Mordtmann of Constantinople, which is on the point of publication, and which treats the question in such an exhaustive manner that any observations of mine would be superfluous. It will be sufficient to state that the numismatic system of the Himyarites may be classified into three divisions; the first consisting of thick coins struck in imitation of the drachmas of Athens with the head of Athena, generally countermarked with a Himyaritic character, on the obverse, and a rude imitation of the owl with the letters AΘE on the reverse; the second consisting of thin coins of still ruder execution, which are designed upon the Athenian tetradrachms of more recent date and are sometimes varied by the head of Augustus on the obverse; and the third comprising the series of small hollow-struck indigenous coins to which those which I have exhibited belong. The first two classes have been very ably treated by Mr. Barclay V. Head in the *Numismatic Chronicle,* N. S. Vol. XVIII, Pages

273-284; and Dr. Mordtmann has gone still further into the question and has I think satisfactorily deciphered the rude Pehlevi inscription which appears on the reverse of some of them. I produce for exhibition to the meeting a specimen of the earliest class from my own collection (Plate X, No. 7). Of the second class which have lately become exceedingly common I possess a considerable quantity in England, including the unique gold coin figured in the plate accompanying Mr. Head's paper (Pl. XIII, Nos. 4, 5—16).* Specimens of the third and most interesting class are still comparatively rare. The two coins of Kariba-êl are the first of this class which have been exhibited before any English Society. In addition to these, I produce a coin of Yada'-äb Yenâf, struck at *Harb* (Caripeta of Pliny?) (Plate X, No. 3), and three of another king, 'Umdân Yehaqba*dh*, struck at Raidân (Plate X, Nos. 4, 5, 6). There are a few other specimens in the British Museum, and Dr. Mordtmann also possesses two examples of Kariba-êl and a few others which are described in the paper to which I have adverted. The indigenous silver coinage of El-Yemen appears to have been succeeded by the gold and copper mintages of the Axumite kings of Abyssinia, who are supposed to have secured a footing in South Arabia towards the close of the 1st century A. D. It will be seen from the specimen which I produce before the meeting (Plate X, No. 8) that these monarchs were to a certain extent indebted to their Himyaritic predecessors for the types of their coins, which it is probable were current in South Arabia until the conversion of that part of the peninsula to Islam.

On the Revenues of the Mughul Empire.—By H. G. KEENE, C. S.

AKBAR'S REVENUE.

The *Journal of the Asiatic Society of Bengal*, Part I, No. IV, 1880, contained a paper by Mr. C. J. Rodgers on the Copper Coins of Akbar. The writer, a practical numismatist well known in Upper India, laid down as a principle that it must have been a necessity of the position of the Emperor Akbar, "when he made a demand from his ministers for revenue returns," to fix upon a standard. He gives us the description of a coin called the "*yak tánka*," weighing 59 grains Troy; and he concludes that the 640 krors of "*morádi tankas*" of Nizam-ud-din Ahmad, about which we have heard so much, must be based on the standard of two hundred to the rupee and be equal to three million two hundred thousand sterling a year. He adds that Abul Fazl's estimate of the revenue of the same period in *dáms* will be equivalent to about the same, or three million five hundred and forty thousand. The discrepancy is not fatal, if we suppose Nizam-ud-din to have been giving only the land revenue, while Abul Fazl added the customs. He adds that Thomas's estimates are incredible, and that the subject is one of great importance; in which every one who thinks much about it must agree.

---

* Dr. Schlumberger (*Le Trésor de San'â*, p. 6, note 2) suggests that this is the same coin as that mentioned by me in the *Transactions of the Soc. of Bibl. Arch.* Vol. II. p. 5, but this is not the case. The coin sent by Capt. Miles to the Royal Asiatic Society from Aden was, I believe, *Axumite.*

But extreme and conflicting as are Mr. Thomas's amounts, there are numerous difficulties in the substitute suggested by Mr. Rodgers. In the first place there is fair evidence that in the next reign, after Khándes and Gujrát had been absorbed in the empire and Todarmal's settlements had borne their fruit, the revenues ran from twelve millions sterling to about seventeen and a half. The first may be gathered from the statement of Coryat, the wandering Vicar of Odcombe, who was a man of a most inquiring disposition, and who gives the detailed account that the revenue (in the early years of Jahangir) was "forty millions of crownes of six shillings each." The second rests upon the testimony of the *Bádsháh námah* of a contemporary of Sháhjáhan's who says that on the demise of the crown the revenue was over 18 *krors*. In the next place, Abul Fazl does not confine his estimate to the 567,63,83,383 *dáms* erroneously given by Mr. Rodgers: he gives it in Rupees, and he repeats it in detail as the aggregate of what he calls his *taqsim Jamas*. In the text of the *Ain Akbari* he says that three *Arbs*, &c. of *dáms* were equal to Rs. 90,749,881, annas 2 and pies 5 and the aggregate of the *taqsim Jamas*, given afterwards, brings the total up, with some customs items, to nearly ten krors (9,96,13,850). Now whatever else is to be discussed, we shall hardly go wrong in supposing that Nizam-ud-din and Abul Fazl both meant the same. Both were financial officers of the highest rank, and, as Mr. Rodgers well says, their estimates are for two succeeding years, the 39th and 40th of the reign. Lastly, there is no sufficient ground for assuming that the *dám* was worth so little as Mr. Rodgers supposes. He arrives at his conclusion by taking it as being five times the value of a *tánka* of which 200 went to the rupee; he says truly enough that forty of these *dáms* were equal to the rupee, *vide* Blochmann's *Ain*, p. 31; and hence he infers that this brings out his estimate of 3 *krors* 54 *lakhs*. But it does not do so. Abul Fazl, as we have seen, though he preserves the proportion of 40 : 1, says that the land revenue in the 40th year was three *Arbs*, sixty-two krors ninety-seven *lakhs*, fifty-five thousand one hundred and forty-six *dáms*, or Rs. 90,749,881 which is the estimate in *dáms* divided by forty.

Thus, then, we see that Mr. Rodgers' first principle was wrong, and we arrive at a second proposition: not only must Abul Fazl and Nizam-ud-din mean much the same total, but they express it in different standards. The *tanka** of the one must bear to the *dám* of the other some such proportion as that of three hundred and sixty-two to six hundred and forty; or, in other words the *tanka* of Nizam-ud-din must have been nearly the sixty-fourth of a rupee.

---

* It will be seen presently that the word is *tanka* تنکہ without the *alif*.

Now it seems to me that the coins figured by Mr. Rodgers furnish an indication of this having been the case. His *dám* weighs 76 grains; and a rupee, as he tells us, is worth 6400 grains or thereabouts which is, indeed, about the average market value in copper. Supposing his *dám* to be a little worn it will represent exactly the half of a revenue *dám* (160 × 40 = 6400) just as the modern "pyce" is half the *tanka* or "*takka*" of native accountants. Mr. Rodgers' *tánka* weighs 59 (say without rubbing 60), which could not possibly have been the *tanka*, of which five went to the *dám* (although five times half would be 150, not far from the weight of the *dám*).

The probability, then, is that the *tanka* mentioned by Nizam-ud-din was no real coin, but a copper integer of account used by him from some local or special reason, as the sixty fourth-part of the silver integer, or Rupee.

Now this can be shewn to be otherwise reasonable. The word *tankah* is given in dictionaries to be (what it still is in native usage) the equivalent of two *paisah*. There is no positive evidence as to the value of the *paisah* of those days; the word does not seem to have been established, in its modern sense, till quite recent times. But the Company struck a coin (which they called "*yak pai*") in the name of the emperor; this coin weighed 100 grains. I have one in my possession which has never been rubbed; but I need not send it, as the Society can easily procure one for reference; and Mr. Rodgers, in his concluding note, also mentions the same thing. But if this was the standard of the imperial coinage, under whatever name, it is but natural that the "*murádi tanka*" (which is otherwise so puzzling) should have been the equivalent expression in the days of Akbar. The *paisah* of those days was the same as the *dám* (Blochmann's *Ain*, p. 51.)

In support of my belief that in point of fact the copper *tanka* was an imaginary figure sometimes used in accounting, I would refer to Mr. Thomas (*Chronicles*, p. 49, note). It is not therefore clear on what data the learned author has elsewhere taken the *tankah* of Nizam-ud-din to be the Sikandari *tankah*. If anything is certain, it is that the use of the word "*murádi*" in accounts means that a sum is being expressed in copper. The exact words used by Nizam-ud-din are to be found in the *Ṭabaqát Akbari*:—

شش صدو چهل کروڑ تنکهٔ مرادي

"*i. e.*, at the present time Hindustan yields a revenue of 640 krors *murádi ṭankahs*" (*v. Elliot-Dowson*, p. 186).

The suggestion that this means ten krors of rupees derives strong confirmation from the following passage in Mr. Thomas's Preface:—

"Indian Currency consisted of hybrid pieces of silver and copper combined in the proportions necessary to constitute the equivalent subdivisions of the ruling silver *tankah*, which was never divided in practice by any other number than 64."

After explaining that the instinct of the Indian was to reckon by fours, and that the copper exchange against silver commenced with four *fuls* to the sixty-fourth part of a silver *tankah*, the author adds :—

"The quaternary scale in short was all pervading; there was no escaping the inevitable fours, sixteens, thirty-twos and sixty-fours, the heritage of the masses which, having survived alike Aryan intrusions and Muhammadan conquest, still flourish undisturbed by the presence of British decimals."

The copper integer or "pyce" of the British currency in India is still 64 to the Rupee ; but I am not sure that there is in this any thing anti-Aryan. Indeed we have in England the analogy of our *avoirdupois* weight, which still proceeds upon a scale of sixteen, as our "crown" of five shillings is the fourth of the pound sterling. If, however, sixty-four was the necessary divisor for bringing copper *tankahs* into their silver equivalent, it appears almost inevitable that the *murádi tankah* of Nizam-ud-din is the sixty-fourth of the *mublígh* or silver integer, which was the Rupee. And hence the revenue of Akbar in his 39th and 40th years was about ten krors of Rupees.

If not, and we are to take the *murádi tankah* to mean merely the coin so called, of which (as we learn from the *Ain*) five went to the *dám* and two hundred to the Rupee, then Mr. Rodgers would be nearer right. The *tanka* figured by Mr. Rodgers weighs 59 grains, that mentioned by Nizam-ud-din (which is however differently spelt) would only be half the sixty-fourth (say 50 grains). If these could be taken to coincide, the revenue aggregate given by the latter would have to be halved also. In that case the word "Hindustan" would have to be taken in a more restricted sense, as meaning nothing but the *Subahs* of Allahabad, Agra, Delhi and Bengal, aggregated by 'Abul Fazl at three *krors* and forty-three *lákhs*.' And this, which is the only alternative solution, is equally destructive with the former of Mr. Thomas' excessive estimate, which he attempts to support by doing violence to Abul Fazl's words and figures. Before adopting it however, we must attentively study the text of Nizam-ud-din, and I believe it will be found impossible to suppose that the geographical area of Hindustan could have been intended to be thus restricted. For we are there told that Hindustan measures 1680 *kos* from the Hindu Kush to the Bay of Bengal and 800 from Kashmir to Baroch: and so measured Hindustan will be found to comprise the whole twelve *Subahs* of Abul Fazl, assessed, as we learn from his details, at nearly ten krors of Rupees, as well as Khandes and Guzrat, whose assessment is more doubtful.

I therefore see no escape from the conclusion that ten *krors* is the right figure; that the estimates of Nizam-ud-din and Abul Fazl agree; and that the *murádi tankah* is neither the one-fifth of a *dám* mentioned in the *Ain* nor the modern "double pyce," but an imaginary integer of copper accounts whereof sixty-four equal one silver Rupee. I conclude, farther, that this sum was increased, by the end of the reign, to about twelve *krors;* that increase being due to good settlements and a firm administration. Of course my conclusion is wholly inconsistent with the complaint of Sir R. Temple (*India in* 1880) that the British get no more out of the empire than the Mughals did. But that is a complaint which would, as I imagine, be endorsed by very few persons who were acquainted with the facts.

On the Identity of Upello with Upaplava.—*By* RISHI KESH BHAṬṬÁCHÁRYA SHÁSTRÍ.

With reference to a letter which was sent a few days ago by the Deputy Commissioner, Delhi, asking about the site of the city of Upello or (the correct word) Upaplava mentioned in the Viráṭaparva, Mahábhárata, I beg to submit the following which I hope may throw some light on the subject.

As Sanskrit literature is wholly destitute of trustworthy geographical records, it is not easy, after the lapse of ages, to ascertain precisely the site of several places enumerated in the Puráṇas. A skilful conjecture only may be made by way of solving the problems of such a nature.

The ṣloka referred to in the letter is:—

उपप्लवं समागम्य स्कन्धावारं प्रविश्य च ।
पाण्डवानथ तान् सर्व्वान् शल्यस्तत्र ददर्श ह ॥

"Ṣalya having arrived at Upaplava entered the camp and saw there all the Páṇḍavas."

Nílakaṇṭha in his commentary on this ṣloka says—उपप्लवं विराटनगरस्य प्रदेशविशेषम् "Upaplava is a city in the kingdom of Viráṭa" (Matsyadeṣa). So the solution of the question solely depends on finding out the site of Matysyadeṣa or the kingdom of Viráṭa, a task which is as difficult as may be expected at a time like this when all the geographical names of ancient India have assumed quite different forms.

However, we must try to trace the place by collecting local traditions as well as Pauráṇika descriptions relating to the subject.

It is a common saying among the people of Midanapur district in Bengal that, the Matsyadeṣa of ancient times had been situated in the vicinity of that district, while others state that the kingdom of Viráṭa had been situate near the Maldah district in Northern Bengal; and both parties show some ruins to verify their respective theories.*

I found the other day in a Bengali Map of India by a Ganeṣachandra Bhaṭṭacharjya that Berar of the present time was marked as the kingdom of Viráṭa of the Mahábhárata. According to the Prákṛita Grammar the word Viráṭa in Sanskrit might be reduced to the form of Biráḍa in the Prákṛita, hence Birára or Berar in the vernaculars. So this last supposition has a strong etymological ground to support it.

The traditions and hypotheses cited above are apparently of such a contradictory nature that from them not much light can be derived. So leaving them aside for a moment, let us search in the Mahábhárata after the districts bordering on Matsyadeṣa.

We find in the Digvijaya Parvádhyáya, of Sabháparva, Mahábhárata:—

विजित्याल्पेन कालेन दशार्णानजयत् प्रभुः ।
तत्र दाशार्णको राजा सुधर्मा लोमहर्षणम् ।
कृतवान् भीमसेनेन महद्युद्धं निरायुधम् ।
युध्यमानं बलात् संख्ये विजिग्ये पाण्डवर्षभः ।
ततो मत्स्यान् महातेजा मलदांश्च महाबलान् ॥

"That Bhima on his way to conquer the eastern countries, having subdued many countries, in a short time came to Daṣárṇa, where Sudharmá the king of the place fought a dreadful battle, but Bhima gained the field. After completing the conquest of this country, the very powerful Bhima subdued the inhabitants of Matsya and Malada respectively."

It is manifest from the above that the Matsyadeṣa of Mahábhárata had Daṣárṇa on one side and Malada on the other. But this, instead of solving the problem, leads us to a greater confusion. Now the question arises where was Daṣárṇa situated, and where Malada? On the reply to this depends our solution, but this is not an easy task.

Mr. Wilson, in his commentary on the 24th ṣloka of Meghadúta recites the following in respect of Daṣárṇa:

"No traces of this name are to be found in modern maps. It is enumerated in Major Wilford's lists from the Puráṇas, Asiatic Researches, Vol. VIII, amongst the countries situated behind the Vindhyá mountains and corresponds according to him with Daseréne of Ptolemy's. * * * * It may possibly correspond, at least in part, with the modern district of Chattisgarh, as the etymology of both words refers to similar circumstances, Chattisgarh being so named from its being supposed to comprise thirty-six forts. According to Bharata the commentator on our text, Daśárṇa is derived from Daṣa ten and Ṛina a stronghold or Durga of the Peninsula and hence means the district of the ten citadels."

---

* [This is a mistake, according to Dr. R. Mitra, who thinks "that the Paṇḍit must have confounded Midnapur with Dinajpur which has often been described as the Viráṭa of the Mahábhárata." See *Proceedings*, *A. S. B.*, August 1880. On the identification of Viráṭa, see General Cunningham's *Ancient Geography of India*, vol. I, p. 350. Ed.]

If we rely on the above a part of the question is solved. Let us now look after Malada.

In his commentary on the 15th ṣloka of Meghadúta in which a term *Mala* occurred, Mr. Wilson observes that " the easterly progress of the cloud and the subsequent direction by which he is to reach the mountain A'mracúta, prove that the place here mentioned must be somewhere in the immediate vicinity of Ruttanpore, the chief town of the northern half of the province of Chattisgarh and described in Captain Blunt's tour, Asiatic Researches, Vol. II, the only modern traces that can be found of it are in a plane called Malda, a little to the north of Ruttanpore; in Ptolemy's map there is a town called Maleta and situated with respect to the Vindya mountains similarly with the Mala of our poet."

Many places may be found in the map of India under the name of Mala or Malwa. A term which according to the Prákṛita Grammar may be supposed to have been derived from the Sanskrit Malada. Mr. Wilford in his lists from the Puráṇas has applied this name to the Malabhoom of Midanapur, Bengal, while according to Pliny Malas are the countries of the Mali of the Punjab, a tribe who are described to have fought a dreadful battle with Alexander the Great. Besides these, a district of the same name, as we have already mentioned, is still to be found in northern Bengal.

This being the case, nothing can be precisely determined by merely saying that Matsyadeṣa was situated between Daṣárṇa and Malada; for we cannot ascertain which of the above mentioned places is meant here. (1) If Malabhoom of Midanapur be taken for it, the first tradition may be deemed acceptable. (2) If Maldah of Bengal be considered to have been the Malada of the text, it would furnish a strong argument in support of the second. (3) If we concur with Mr. Wilson, the place so described in the Bengali map might be considered as possibly a correct one. So the solution still is enveloped in hopeless confusion.

Let us adopt another way which may lead us to the correct place.

Manu in his division of India states:—

"सरस्वतीदृषद्वत्योर्देवनद्योर्यदन्तरम् ।
तं देवनिर्म्मितं देशं ब्रह्मावर्त्तं प्रचक्षते ॥
कुरुक्षेत्रं च मत्स्याश्च पाञ्चालाः शूरसेनकाः ।
एष ब्रह्मर्षिदेशो वै ब्रह्मावर्त्तादनन्तरः ॥"

"The sacred place lying between the two divine rivers Saraswatí and Drishadwatí (Gagra) is called Brahmávarta, and next to Brahmávarta is Brahmarshideṣa, a place consisting of Kurukshetra, Matsya, Pánchála, and Ṣúrasenaka."

Kullúkabhaṭṭa, in his commentary on the last ṣloka, says "मत्स्यादिशब्दा बहुवचनान्ता देशविशेषवाचकाः—पाञ्चालाः कान्यकुब्जदेशाः शूरसेनका मथुरादेशाः' "The words Matsya &c., when used as plural, denote the countries of the same names. Pánchála is the name of Kányakubjadeṣa and Ṣúrasena of Mathurá."

It would be out of place here to discuss whether Pánchála and Kányakubja are two different names of the same place. Yet it may be safely inferred that even at the time of *Kullúkabhaṭṭa* the names of the places mentioned in the old books must have become obsolete, otherwise Kullukabhaṭṭa would have pointed out the modern name of Matsya. Nevertheless it is evident from the above mentioned passage of Manu that Matsya Deṣa was situate next to Kurukshestra in the Ambala district and was probably on the south-east of it.

Again we find in Viráṭaparva, Mahábhárata—the way of the Paṇḍavas from Kámyavana—a forest extending on the banks of the Saraswatí—to Matsyadeṣa is described as follows :—

"उत्तरेण दशार्णांस्ते पाञ्चालान् दक्षिणेन च ।
अन्तरेण यकृल्लोमान् शूरसेनांश्च पाण्डवाः ।
लुब्धा ब्रुवाणा मत्स्यस्य विषयं प्राविशन् वनात् ॥"

"Páṇḍavas calling themselves hunters and going straight by north of Daṣárṇa, south of Pánchála and through Yakrilloma and Ṣúrasena reached the kingdom of Matsya." From this passage we may easily infer that Matsyadeṣa must have been situate on the north-west of Ṣúrasena (modern Mathurá), a place nearly corresponding with that of Manu.

Moreover it is mentioned in the Gograhaparvádháya, Viráṭaparva of the Mahábhárata, that Matsyadeṣa was situated on the south-east of Hastinapur, then the capital of India, and was at a distance of two days' journey from it, thus :—

"ते तु गत्वा यथोद्दिष्टां दिशं वह्नेर्महीपते ।
सन्नद्धा रथिनः सर्व्वे सपादाता बलोत्कटाः ।
प्रतिवैरं चिकीर्षन्तो गोषु गृद्धा महाबलाः ।
अपरे दिवसे सर्व्वे राजन् सम्भूय कौरवाः ।
अष्टम्यां ते न्यगृह्णन्त गोकुलानि सहस्रशः ॥"

A place called Hathnapore in the Mirut district is supposed to be the Hastinapore of the Mahábhárata. This supposition also, if correct, supports our point. On the whole we may be satisfied that Matsyadeṣa must have been situated between Mathurá and Delhi, and consequently the Paṇḍits who claim that Upello on the Delhi and Agra road was the Upaplava of ancient times may be quite correct.

As regards Daṣárṇa, although we have not any strong argument on our side to refute Mr. Wilson, yet we may freely urge that there was a Daṣárṇa in the north-western Provinces; for a river of the same name is still to be found in the Hamirpur district, North-West Provinces.

With respect to Malada it is true that no definite trace of it is to be found now. Nevertheless we must consider it to have been situate in the North-Western Provinces. There is a place in the Delhi district called Malwa, from which a large quantity of oil is exported to various provinces of Hindustan. I may throw out the suggestion that this Malwa may be the Malada of the Mahábhárata. If this be the case we have got a consistent theory which may be provisionally accepted as true until some better one be found in its place.

Translations from the Ḥamáseh.—By C. J. Lyall, C. S.

In the Journal of the Asiatic Society of Bengal for 1877 I published some translations of old Arabian poetry, chiefly from the *Ḥamáseh*, and the following are offered in continuation of those. Somewhat more exactness of metrical form has now been aimed at in the English versions, but I hope that accuracy has not been allowed thereby to suffer. The majority of the poems have been translated in Arabian metres, a full explanation of each of which will be found where it occurs. A critic in the *Academy*, noticing the previous series, has called in question the possibility of giving in the English language any idea of Arab metres, or at least the adequacy of the attempt made in that series. On that occasion, however, I aimed (with one exception) at no exact reproduction in English of the order and quantity of the syllables in the Arabic originals: only a general likeness was intended; and that likeness seemed to me to be sufficiently secured. I may mention that I have carefully studied M. Stanislas Guyard's *Théorie Nouvelle de la Métrique Arabe*, and that any discrepancy which may be detected between his views on the Arabian metres and mine is not due to my ignorance of the former. The four metres which I have imitated in the translations are the *Ṭawíl*, the *Hezej*, the *Kámil*, and the *Wáfir* (the last exactly only in one poem, No. III: in Nos. XV and XXII only the general scheme is followed).

As regards the last three, I believe that there is little or no difference between M. Guyard and myself. As regards the *Ṭawîl*, I am as yet quite unable to accept his theory of the value of the foot *fa'ûlun*, which he considers presents a double ictus, like *mafâ'îlun*. This is not the place to argue the question; but all the phenomena alleged by M. Guyard in support of his view appear to me to bear an interpretation consistent with that taken by me, while there is much besides that confirms me in my opinion.

The poems here rendered belong to all the periods of which specimens are given in the *Ḥamâseh*, from the oldest days of the War of Basûs down to the time immediately preceding that in which the collection was compiled. The majority are, however, ancient. The probable dates have been given when I could ascertain them; but it will of course be understood that those put forward by Caussin de Perceval for pre-islamic times are for the most part conjectural, and at the best only approximate. The references to the pages of the *Ḥamâseh* are to Freytag's edition of the Arabic text, with et-Tebrîzî's commentary.

I.

قال الفند الزماني في حرب البسوس

صَفَحْنَا عَنْ بَنِي هِنْدٍ وَقُلْنَا ٱلْقَوْمُ إِخْوَانُ
عَسَى ٱلْأَيَّامُ أَنْ يَرْجِعْـــنَ قَوْمًا كَٱلَّذِى كَانُوا
فَلَمَّا صَرَّحَ ٱلشَّـــرُّ فَأَمْسَى وَهْوَ عُرْيَانُ
وَلَمْ يَبْقَ سِوَى ٱلْعُدْوَا نِ دِنَّاهُمْ كَمَا دَانُوا
٥ مَشَيْنَا مِشْيَةَ ٱللَّيْثِ غَدَا وَٱللَّيْثُ غَضْبَانُ
بِضَرْبٍ فِيهِ تَوْهِيـــنٌ وَتَخْضِيـــعٌ وَإِقْـــرَانُ
وَطَعْنٍ كَفَمِ ٱلزِّقِّ غَذَا وَٱلزِّقُّ مَـــلْآنُ
وَبَعْضُ ٱلْحِلْمِ عِنْدَ ٱلْجَهْـــلِ لِلذِّلَّةِ إِذْعَـــانُ
وَفِى ٱلشَّرِّ نَجَاةٌ حِيـــنَ لَا يُنْجِيكَ إِحْسَانُ

El-Find ez-Zimmání.

Forgiveness had we for Hind's sons :
  we said : 'The men our brothers are :
The Days may bring that yet again
  they be the folk that once they were.'
But when the Ill stood clear and plain,
  and naked Wrong was bare to day,
And nought was left but bitter Hate—
  we paid them in the coin they gave.
5 We strode as stalks a lion forth
  at dawn, a lion angry-eyed ;
Blows rained we, dealing shame on shame,
  and humbling pomp and quelling pride :
Spear-thrusts wherefrom the spouting blood
  gushed forth as wine from full wine-skin.
Too kind a man may be with fools,
  and move them but to flout him more ;
And Mischief oft may bring thee peace,
  when Mildness works not Folly's cure.

Ḥamâseh, pp. 8—12.

NOTES.

The metre of this poem is *Hezej* of the first form :—

⏑ – – ⏓ | ⏑ – – ⏓ || ⏑ – – ⏓ | ⏑ – – –

The English endeavours to reproduce it as far as the metrical structure of our language will permit.

The author's real name was Shahl son of Sheybân : his surname, el-Find, means "the mountain crag" or "a mighty piece of a mountain." Accounts differ as to the reason why it was given ; some say he was so called because of the hugeness of his stature : others, that he said on a day of battle to his fellows who were pressed hard—"Plant yourselves against me : I will be a rock to your backs."

The Benû Zimmân, to which tribe he belonged, were of the offspring of Bekr son of Wâil, and dwelt in the central mountains of Nejd among the Benû Ḥanîfeh. They, like their friends of Ḥanîfeh, long held aloof from the War of Basûs (one of the greatest of the ante-Islamic struggles between the Arab tribes), which was at first confined to the divisions of Bekr descended from Ḍuhl son of Sheybân on the one side, and Teghlib on the other. For many years Sheybân was worsted in the contest with Teghlib, and at last the former sought the aid of el-Ḥârith son of ʻObâd, chief of Ḥanîfeh, in bringing about a peace. El-Ḥarith sent his son (some say, nephew) Bujeyr to the men of Teghlib to treat for a compromise. The young man was, however, slain by Muhelhil, the leader of Teghlib, in despite of his character of peacemaker; and from that time el-Ḥârith and his tribe were arrayed with their brethren of Bekr against Teghlib. The latter soon found that fortune had turned; and the struggle ended, after forty years of strife, in a hollow peace and the emigration of Teghlib to the uplands of el-ʻIrâq.

The War of Basûs is a great centre of old Arab song and story. It is also one of the oldest well-vouched-for historical events of the Days of the Ignorance. Caussin de Perceval places its commencement, the slaying of Kuleyb, in 494 A. D., and the death of Bujeyr and the taking part in the war of el-Ḥârith son of ʻObâd in the following year, 495; but this seems to me an error. Several battles are named in which Teghlib was victorious, before the disastrous Day of Qiḍḍah, "the Day of the shaving of the love-locks," *Tiḥlâq el-limem*, when they were beaten with great slaughter by el-Ḥârith; and I think we must allow at least five years between the outbreak of the war and this event.

The poem above given is connected by tradition with the War of Basûs, and it was most probably composed when the men of Ḥanîfeh were, by the treacherous murder of Bujeyr, drawn into the strife of Bekr with Teghlib. This would fix its date as about the end of the 5th century after Christ.

v. 1. "Hind's sons." This is the better reading: the text of Freytag gives "sons of Đuhl;" but no contest of Ḥanîfeh with Đuhl is recorded: certainly not during the War of Basûs. Hind is the reading given as an alternative in the notes, and that found in the *Kitâb el-Aghânî*, xx, 143. This Hind was the mother of Teghlib, herself the daughter of Murr son of Udd, and sister of Temîm.

The first two couplets of the poem have been somewhat inappropriately quoted by more than one writer on old Arab legend as a proverbial example of brotherly endurance of injury. They are but the prelude to a stern administration of chastisement.

v. 6. The exact meaning of *iqrân* is difficult to ascertain: of its general sense there can be no doubt. Literally it should be "a yoking together"; and it seems probable that it refers to the taming of an unruly camel, which is tied to a stronger one that is tame, and so brought under control. Thus ʻAmr son of Kulthûm says in his Moʻallaqah (v. 66):—

matà naʻqid qarînatanâ (better, *toʻqad qarînatunâ*) *biḥablin*
tejudda-l-ḥabla 'au teqiṣi-l-qarînâ.

that is

> "When we bind our unruly camel to another with a cord [to tame her] (or, as I prefer to read :
> "When our unruly camel is bound to another with a cord,")
> "She snaps the cord or breaks her fellow's neck."

The meaning of this couplet is illustrated by an anecdote told of 'Amr son of Kulthûm in the Aghânî (ix. 183), on the authority of Ibn-el-A'râbî : " 'Amr son of Kulthûm of Teghlib led a foray against the men of Temîm : then he swept down upon a tribe of Qeys son of Tha'lebeh, and filled his hands with their goods, and took prisoners and captives. Then he ended that expedition in el-Yemâmeh where the Benû Ḥanîfeh dwelt, among whom were certain men of 'Ijl. But the men of Ḥajr heard of his coming, and the first who went forth to meet him of Ḥanîfeh were the Benû Lujeym, with Yezîd son of 'Amr son of Shemir at their head. This chief, when he saw the son of Kulthûm, set his lance at him, pierced him, and cast him to ground from his horse : for Yezîd was a mighty man, huge of bulk. And he bound him with bonds of leather, and said to him—'Art thou not he that saith—

> "When our unruly camel is bound to another with a cord,
> she snaps the cord or breaks her fellow's neck" ?

Lo! I will yoke thee (*sa'uqrinuka*) to this camel of mine, and drive the pair of you together side by side.' Then cried 'Amr, 'Help, men of Rabî'ah! Like shall be paid for like !'* And the men of Lujeym gathered together and besought Yezîd not to do as he said ; but he had never really purposed it. And he carried 'Amr with him to one of their castles in Ḥajr, where he pitched a tent for him, and slew beasts to feast him, and clad him in rich clothing, and gave him a goodly she-camel to ride, and poured for him wine to drink." &c.

From all of which it follows that *qarîneh* means a camel which is yoked to another *(qarîn)* to cure her stubbornness, and that *aqrana* is used for the action of yoking a *qarîneh* to a *qarîn ;* which justifies my rendering, "quelling pride," and explains how *iqrân* comes to mean, as et-Tebrîzî says it does, *ghalbeh,* "overcoming."

II.

قال عروة بن الورد العبسي

لَحَا ٱللّٰهُ صُعْلُوكًا إِذَا جَنَّ لَيْلُهُ   مُصَافِي ٱلْمُشَاشِ آلِفًا كُلَّ مَجْزَرِ
يَعُدُّ ٱلْغِنَي مِنْ نَفْسِهِ كُلَّ لَيْلَةٍ   أَصَابَ قِرَاهَا مِنْ صَدِيقٍ مُيَسَّرِ

---

* So I render *Yâ la-Rabî'ah ! 'amthiletan !* *Amthileh* is pl. of *mithâl.*

يَنَامُ عِشَاءً ثُمَّ يُصْبِحُ نَاعِسًا   يَحُتُّ الْحَصَى عَنْ جَنْبِهِ الْمُتَعَفِّرِ
يُعِينُ نِسَاءَ الْحَيِّ مَا يَسْتَعِنَّهُ   وَيُمْسِي طَلِيحًا كَالْبَعِيرِ الْمُحَسَّرِ
٥ وَلٰكِنَّ صُعْلُوكًا صَفِيحَةُ وَجْهِهِ   كَضَوْءِ شِهَابِ الْقَابِسِ الْمُتَنَوِّرِ
مُطِلًّا عَلَى أَعْدَائِهِ يَزْجُرُونَهُ   بِسَاحَتِهِمْ زَجْرَ الْمَنِيحِ الْمُشَهَّرِ
إِذَا بَعُدُوا لَا يَأْمَنُونَ اقْتِرَابَهُ   تَشَوُّفَ أَهْلِ الْغَائِبِ الْمُتَنَظَّرِ
فَذٰلِكَ إِنْ يَلْقَ الْمَنِيَّةَ يَلْقَهَا   حَمِيدًا وَإِنْ يَسْتَغْنِ يَوْمًا فَأَجْدِرِ

'Orweh son of el-Ward of 'Abs.

God's scorn on the homeless wight who under the pall of Night
goes cowering the shambles through, and gathers the marrow-bones;
Who comforts his heart, full rich, as oft as at eventide
he lights on a wealthy friend to yield him his fill of milk!
He lies in the twilight down, and drowsy the morrow wakes,
and shakes from his dust-spread side the gravel where he has lain.
A help to the women-folk in all that they bid him do,
at even he jaded lies like camel outstretched to die.
5 So he: but the homeless wight the breadth of whose valiant face
glows bright as a mighty flame that shines through the mid-night mirk,
A terror to all he hates, besetting their way with fear,
while home-bound they curse him deep, as losers the luckless shaft:
Though far from his haunts they dwell, they image his coming nigh,
and watch, as his kinsmen watch when one whom they love comes home:
Yea, he, if he lights on Death in faring his way, a death
of glory it is; and if on Riches one day, how due!

Ḥam. pp. 207—9.

NOTES.

The metre is the most ordinary form of the *Ṭawîl;* the English imitates it :—

⏑ – ⏓ | ⏑ – ⏓ – | ⏑ – ⏓ | ⏑ – ⏑ – ‖ ⏑ – ⏓ | ⏑ – ⏓ – | ⏑ – ⏓ | ⏑ – ⏑ –
(rare) (rare)

'Orweh son of el-Ward was a warrior and singer of 'Abs in the long war which that tribe waged against Đubyân called the War of Dâḥis, A. D. 568—608 (C. de Perceval). He was a proverb for his generosity, and it was said of him by one of the early Khalifehs—"He who calls Ḥâtim the most generous of the Arabs wrongs 'Orweh." His very name implies his character: for *'orweh* means those trees and bushes fit for pasture which do not dry up in seasons of drought, and are therefore a resource in times of dearth. He was called *'Orwat-eṣ-Ṣa'âlîk,* "The resource in time of hunger of all vagabonds," because he never failed to give them of his store, or to find food for them by plundering others. Much of his poetry has survived and has been edited and published by Prof. Noeldeke.

Such a vagabond as 'Orweh delighted to help, and such an one as he despised, are here set before us by himself. These *Ṣa'âlîk,* outlaws, homeless men, were numerous in the days of the Ignorance. Ta'abbaṭa Sherrà was such an one: such were es-Suleyk son of es-Sulakeh and esh-Shenfarà of Azd. They were men who had on them the guilt of blood and had been disowned by their tribe. All men's hands were against them, and they alone against all. What hardness and heroic strength of heart this solitude bred are nowhere so strikingly seen as in that most magnificent of old Arab poems, the *Lâmiyyeh* of esh-Shenfarà.

v. 1. "God's scorn be on him," literally, "may God smite him on the cheek" and so disgrace him.

The word *muṣâfî* in this line is difficult, both to parse and render: for the discussion of it the reader is referred to et-Tebrîzî and Freytag's notes. I have taken it in the sense of "gathering up out of the dust and cleaning," but with some diffidence. There is a various reading for it—*maḍà fî:* "who goes after, or in search of:" but this has the aspect of a device to smoothe a difficulty, and is frigid.

v. 2. "His fill of milk:" that "milk" is intended by the "entertainment," *qirà,* spoken of, I infer from the meaning of *muyessir,* which denotes "one whose herds and flocks yield him abundance of milk."

v. 3. He goes to rest early and rises late, still drowsy.

v. 6. "As losers curse the luckless shaft": *zejra-l-menîḥi-l-mushahheri; el-menîḥ* was the name of one of the three arrows which, in the game played with ten arrows by the pagan Arabs, had no lots assigned to them.

Seven of the ten were winning arrows, and three, *el-menîḥ*, *es-sefîḥ*, *el-weghîd*, losing. *El-menîḥ* may also mean *lent*: but it is unnecessary to take it in that sense here.

v. 7. "Watch:" *teshawwuf* means straining the gaze in looking for a distant object.

III.

قال ابو الغول الطهوي

فَدَتْ نَفْسِي وَمَا مَلَكَتْ يَمِينِي   فَوَارِسَ صَدَّقَتْ فِيهِمْ ظُنُونِي
فَوَارِسَ لَا يَمَلُّونَ ٱلْمَنَايَا   إِذَا دَارَتْ رَحَا ٱلْحَرْبِ ٱلزَّبُونِ
وَلَا يَجْزُونَ مِنْ حَسَنٍ بِسَيْءٍ   وَلَا يَجْزُونَ مِنْ غَلَظٍ بِلِينِ
وَلَا تَبْلَي بَسَالَتُهُمْ وَإِنْ هُمْ   صَلُوا بِٱلْحَرْبِ حِينًا بَعْدَ حِينِ
٥ هُمْ مَنَعُوا حِمَي ٱلْوَقْبَي بِضَرْبٍ   يُؤَلِّفُ بَيْنَ أَشْتَاتِ ٱلْمَنُونِ
فَنَكَّبَ عَنْهُمُ دَرْءَ ٱلْأَعَادِي   وَدَاوَوْا بِٱلْجُنُونِ مِنَ ٱلْجُنُونِ
وَلَا يَرْعَوْنَ أَكْنَافَ ٱلْهُوَيْنَا   إِذَا حَلُّوا وَلَا أَرْضَ ٱلْهُدُونِ

Abu-l-Ghûl eṭ-Ṭuhawî.

My life and my wealth, yea all that is mine, be ransom
  against Time's wrong for those who shewed true my forecast!
The knights who are weary never before Death's onset,
  though stubbornest Strife ply there the dread Mill of Battle.
Men they who requite not good with an evil guerdon,
  nor do they return for roughness a gentle answer.
Their sternness abides unflagging, though they be roasted
  again and again in War's most flaming furnace.
5 They held with the sword el-Waqbà's guarded meadow,
  —the sword from whose edge flew all Death's shapes united;
It drave from before them headlong the rush of foemen,
  and madness at last was healed by a wilder fury.
Not men they to feed their flocks on the skirts of Quiet:
  not they to pitch tent, whereso they abide, in meekness!

Ḥam. pp. 12—15.

NOTES.

The metre is *Wâfir* of the first form, and is imitated in the English :—

$$\smile - \underset{-}{\smile\smile} - \mid \smile - \underset{-}{\smile\smile} - \mid \smile - - \parallel \smile - \underset{-}{\smile\smile} - \mid \smile - \underset{-}{\smile\smile} - \smile - -$$

The poem belongs to the early days of el-Islâm, when the rivalries of the Arab tribes were still as strong as before the coming of the new faith. The event on which it touches happened in the days of 'Othmân (A. H. 25—35). El-Waqbà (or el-Waqabà according to the *Marâṣid*, iii. p. 294) was a *ḥimà* or pasturage surrounding a well of water, reserved by a tribe or family for its own use and forbidden to others, lying on the road between el-Baṣrah and el-Medîneh, three miles distant from eḍ-Ḍajû'. Such *ḥimàs* (which I render by "guarded meadow") are often heard of in Arab verse and story, and disputes connected with them gave occasion to bloody contests. The War of Basûs, for instance, took its rise in the trespass of a strange camel named Sarâbi, belonging to a guest of the house of Jessâs son of Murrah, of the family of Đuhl son of Sheybân, into the *ḥimà* of Kuleyb, chief of the combined clans of Teghlib and Bekr. Kuleyb shot at and wounded the camel, and was himself slain by Jessâs in revenge for the insult done to his guest. In the days of 'Othmân, says et-Tebrîzî, 'Abdallâh son of 'Âmir, of the family of 'Abd-Shems son of 'Abd-Menâf, was governor of el-Baṣrah and its dependencies, and he gave over the charge of the *ḥimàs* of that region to Bishr son of Ḥazn of Mâzin (a branch of Temîm). Bishr and his brother Khufâf took possession of el-Waqbà, and digged there two wells, called Đât-el-Qaṣr and el-Jaufà, which exist to this day. Fearing lest 'Abdallâh should take them away by force (for their water was sweet as morning rain), they buried them under mounds of earth to hide them. But the matter reached 'Abdallâh, who demanded of them the wells which they had dug without his leave. They refused to surrender them, and were ejected by him from their office. Now 'Abdallâh had placed his uncle Mas'adeh of Suleym over the well of Abû Mûsà. This well was taken forcible possession of by some men of Bekr and a company gathered from other tribes, and when Mas'adeh called upon them to pay for its use, Sheybân son of Khaṣafeh of Bekr smote him in the face with his sword, so that he was carried wounded to his house. Thereon the men of Bekr removed to el-Waqbà, as being nearer to their home and a safer abode, and settled there. And Bishr son of Ḥazn sent word to the Bekrîs—"If ye desire only to halt here this summer, ye and those that are with you of your tribe, halt and be welcome ; but if ye desire aught else, let me know of it : for this is my land and my water." But they replied, threatening him—"If we see thee in el-Waqbà, we will do to thee thus and thus." Whereon Bishr sent his brother Khufâf and other kinsmen to all the men of Temîm settled round about, to the Bel-'Ambar, to the Benû Yerbû' ibn Ḥanð̣aleh, and to the Benû Mâzin ibn Mâlik, asking help against Bekr. How these men fared among their kinsmen, who helped them and who hung back, is told at great length, and were tedious to relate here. In the end the men of Mâzin rode forth to attack Bekr, and overcame them, and recovered el-Waqbà for their tribe, who still held it in the days of the geographer Abû 'Obeyd el-Bekrî, who died A. H. 487. And this deed of Mâzin is the subject of the poem.

Abu-l-Ghûl eṭ-Ṭuhawî, the author, is so called because he was descended from Ṭuheyyeh, daughter of 'Abd-Shems son of Sa'd son of Zeyd-Menâh. This woman had three sons, 'Auf, Abû Sûd, and Jusheysh, by Mâlik son of Ḥanð̣aleh; and the posterity of these were known by their mother's name, not their father's: a very rare thing in Arabian genealogies.

v. 1. "May my life be thy ransom!" is a phrase which recurs constantly in Arab verse. Like expressions are—"May my father and mother be thy ransom," "May I be thy sacrifice!" &c. The idea of *fidâ* is, of course, that the person devoting himself takes upon him all the evil in the destiny of the other whom he addresses. Hence the common expression, heard every day in India, *fidwî* (properly *fidawî).*

v. 2. "The Mill of Battle": a frequent comparison in old Arab poetry; the *locus classicus* is in the Mo'allaqah of 'Amr son of Kulthûm, vv. 30, 31:—

matà nenqul 'ilà qaumin raḥânâ
    yekûnû fi-l-liqâ'i lahâ ṭaḥînâ.
yekûnu thifâluhâ sharqiyya Nejdin
    waluhwatuhâ Quḍâ'atu 'ajma'înâ

"When our war-mill is set against a people,
    as grain they fall thereunder ground to powder.
"Eastward in Nejd is set the skin thereunder,
    and the grain cast therein is all Quḍâ'ah."

"Stubbornest strife": the word *zabûn* signifies thrusting, pushing, straining one against another.

v. 4. "Roasted"—*ṣalû bil-ḥarbi.* This, again, is one of the commonest phrases for War: as in the words of el-Ḥârith son of 'Obâd (for the incident, see the notes to No. I):—

lam 'akun min junâtihâ, 'alima-l-lâ-
    hu, wa'innî biḥarriha-l-yauma ṣâlî.

"I was not of those whose wrong wrought it, God knows!
    yet must I today be burned in its blaze."

v. 5. "All Death's forms": *ashtât-el-manâni.* The best way to take the phrase is, I think, to understand the various strokes by which death can be dealt with a sword: as shearing off the head, cleaving the skull, &c.

IV.

قال ابراهيم بن كنيف النبهاني

تَعَزَّ فَإِنَّ الصَّبْرَ بِالْحُرِّ أَجْمَلُ   وَلَيْسَ عَلَي رَيْبِ الزَّمَانِ مُعَوَّلُ
فَلَوْ كَانَ يُغْنِي أَنْ يُرَيٰ الْمَرْءُ جَازِعاً   لِحَادِثَةٍ أَوْ كَانَ يُغْنِي التَّذَلُّلُ
لَكَانَ التَّعَزِّي عِنْدَ كُلِّ مُصِيبَةٍ   وَنَائِبَةٍ بِالْحُرِّ أَوْلَى وَأَجْمَلُ
فَكَيْفَ وَكُلٌّ لَيْسَ يَعْدُو حِمَامَهُ   وَمَا لِامْرِيءٍ عَمَّا قَضَى اللّٰهُ مَزْحَلُ
٥ فَإِنْ تَكُنِ الْأَيَّامُ فِينَا تَبَدَّلَتْ   بِبُؤْسَي وَنُعْمَي وَالْحَوَادِثُ تَفْعَلُ
فَمَا لَيَّنَتْ مِنَّا قَنَاةً صَلِيبَةً   وَلَا ذَلَّلَتْنَا لِلَّتِي لَيْسَ تَجْمُلُ
وَلٰكِنْ رَحَلْنَاهَا نُفُوساً كَرِيمَةً   تُحَمَّلُ مَا لَا يُسْتَطَاعُ فَتَحْمِلُ
وَقَيْنَا بِحُسْنِ الصَّبْرِ مِنَّا نُفُوسَنَا   فَصَحَّتْ لَنَا الْأَعْرَاضُ وَالنَّاسُ هُزَّلُ

Ibrâhîm son of Kuneyf en-Nebhânî.

Be patient: for free-born men to bear is the fairest thing,
and refuge against Time's wrong or help from his hurt is none.
And if it availed man aught to bow him to fluttering Fear,
or if he could ward off hurt by humbling himself to Ill,
To bear with a valiant front the full brunt of every stroke
and onset of Fate were still the fairest and best of things.
But how much the more, when none outruns by a span his Doom,
and refuge from God's decree nor was nor will ever be.
5 And sooth, if the changing Days have wrought us—their wonted way—
a lot mixed of weal and woe, yet one thing they could not do:
They have not made soft or weak the stock of our sturdy spear:
they have not abased our hearts to doing of deeds of shame.

We offer to bear their weight a handful of noble souls:
though laden beyond all might of man, they uplift the load.
So shield we with Patience fair our souls from the stroke of Shame:
our honours are whole and sound, though others be lean enow.

Ḥam. pp. 125-6.

NOTES.

The metre is the same as that of No. II.

I have been able to ascertain nothing regarding the author; from his name, Ibrâhîm, he was doubtless born after the promulgation of el-Islâm. His tribe, Nebhân, was one of the divisions of Ṭayyi'. The sentiment of vv. 5—8 seems to shew that the poem belongs to the first days of the new faith. The stress laid on the word *ḥorr*, "free born," in vv. 1 and 3 is also consonant with that age, when the Arabs were being thrust into the background by the invasion of all important posts, civil and military, by *mawâlî*, "freedmen" of foreign birth.

v. 6. "The stock of our sturdy spear": *qanâtan ṣalîbatan.* The spear is here not the actual weapon, but the stubbornness and strength of backbone of the clan. Examples of the metaphor abound; the following is found in the Mo'allaqah of 'Amr son of Kulthûm (vv. 57—59):—

fa'inna qanâtanâ, yâ 'Amru, 'a'yet
'ala-l-'a'dâ'i qablaka 'an telînâ:
'iđâ 'aḍḍa-th-thiqâfu biha,-shma'azzet
wa-wellet-hû 'ashauzanatan zabûnâ—
'ashauzanatan: 'iđa-nqalabet, 'arannet
teshujju qafa-l-muthaqqifî wa-l-jebînâ.

"In sooth our spear, o'Amr, has outworn too many a hand
that strove against it before thee, that it should be soft to thee!
"When the straightening-iron clipped it, it stiffened itself against it,
and turned it back upon the the wielder thereof, stubborn and sturdy:
"Yea, stubborn: when it was bent to mould it, it cried out,
and wounded the neck and forehead of the straightener."

The phrases "the spear of such an one is hard," or "there is weakness in their spear," are almost commonplaces. Et-Tebrîzî quotes—

kânet qanâtî lâ telînu lighâmizin;
fa'alânaha-l-'aṣbâḥu wa-l-'amsâ'u.

"Time was when my spear yielded to none that tried its strength;
but softness has come upon it from the Dawns and the Setting Suns:"
i. e., the passing of the days.

V.

قال دريد بن الصمة

نَصَحْتُ لِعَارِضٍ وَأَصْحَابِ عَارِضٍ   وَرَهْطِ بَنِي السَّوْدَاءِ وَالْقَوْمُ شُهَّدِي
فَقُلْتُ لَهُمْ ظُنُّوا بِأَلْفَيْ مُدَجَّجٍ   سَرَاتُهُمُ فِى الْفَارِسِيِّ الْمُسَرَّدِ
فَلَمَّا عَصَوْنِي كُنْتُ مِنْهُمْ وَقَدْ أَرَى   غَوَايَتَهُمْ وَأَنَّنِي غَيْرُ مُهْتَدِي
وَهَلْ أَنَا إِلَّا مِنْ غَزِيَّةَ إِنْ غَوَتْ   غَوَيْتُ وَإِنْ تَرْشُدْ غَزِيَّةُ أَرْشُدِ
٥ أَمَرْتُهُمُ أَمْرِي بِمُنْعَرَجِ اللِّوَى   فَلَمْ يَسْتَبِينُوا الرُّشْدَ إِلَّا ضُحَى الْغَدِ
تَنَادَوْا فَقَالُوا أَرْدَتِ الْخَيْلُ فَارِسًا   فَقُلْتُ أَعَبْدُ اللّٰهِ ذَلِكُمُ الرَّدِي
فَجِئْتُ إِلَيْهِ وَالرِّمَاحُ تَنُوشُهُ   كَوَقْعِ الصَّيَاصِي فِى النَّسِيجِ الْمُمَدَّدِ
وَكُنْتُ كَذَاتِ الْبَوِّ رِيعَتْ فَأَقْبَلَتْ   إِلَى جَلَدٍ مِنْ مَسْكِ سَقْبٍ مُقَدَّدِ
فَطَاعَنْتُ عَنْهُ الْخَيْلَ حَتَّى تَنَفَّسَتْ   وَحَتَّى عَلَانِي حَالِكُ اللَّوْنِ أَسْوَدِي
١٠ قِتَالَ امْرِئٍ آسَى أَخَاهُ بِنَفْسِهِ   وَيَعْلَمُ أَنَّ الْمَرْءَ غَيْرُ مُخَلَّدِ
فَإِنْ يَكُ عَبْدُ اللّٰهِ خَلَّى مَكَانَهُ   فَمَا كَانَ وَقَّافًا وَلَا طَائِشَ الْيَدِ
كَمِيشُ الْإِزَارِ خَارِجٌ نِصْفُ سَاقِهِ   بَعِيدٌ مِنَ الْآفَاتِ طَلَّاعُ أَنْجُدِ
قَلِيلُ التَّشَكِّي لِلْمُصِيبَاتِ حَافِظٌ   مِنَ الْيَوْمِ أَعْقَابَ الْأَحَادِيثِ فِى غَدِ
تَرَاهُ خَمِيصَ الْبَطْنِ وَالزَّادُ حَاضِرٌ   عَتِيدٌ وَيَغْدُو فِي الْقَمِيصِ الْمُقَدَّدِ
١٥ وَإِنْ مَسَّهُ الْإِقْوَاءُ وَالْجَهْدُ زَادَهُ   سَمَاحًا وَإِتْلَافًا لِمَا كَانَ فِى الْيَدِ

صَبَا مَا صَبَا حَتَّى عَلَا الشَّيْبُ رَاسَهُ   فَلَمَّا عَلَاهُ قَالَ لِلْبَاطِلِ ابْعَدِ
وَطَيَّبَ نَفْسِي أَنَّنِي لَمْ أَقُلْ لَهُ   كَذَبْتَ وَلَمْ أَبْخَلْ بِمَا مَلَكَتْ يَدِي

Dureyd son of eṣ-Ṣimmeh.

I warned them, both 'Âriḍ and the men who went 'Âriḍ's way
—the stock of Benu-s-Saudâ : yea, all are my witnesses.
I said to them : 'Think—even now two thousand are on your track,
all laden with spear and sword, their captains in Persian mail.'
But when they would hearken not, I followed their road, though I knew well they were fools, and that I walked not in Wisdom's way :
For am I not but one of Ghaziyyeh ? and if they err,
I err with my house ; and if Ghaziyyeh go right, so I.
5 I read them my rede one day beneath where the sandhills fail :
the morrow at noon they saw my counsel as I had seen.
A shout rose, and voices cried—'The horsemen have slain a knight !'
I said—'Is it 'Abdallâh, the man who ye say is slain ?'
I sprang to his side : the spears had riddled his body through,
as weaver on outstretched web plies deftly the sharp-toothed comb.
I stood as a camel stands with fear in her heart, and seeks
the stuffed skin with eager mouth, and thinks—is her youngling slain ?
I plied spear above him till the riders had left their prey,
and over myself black blood flowed forth in a dusky tide.
10 I fought as a man who gives his life for his brother's life,
who knows that his time is short, that Death's doom above him hangs.
But know ye, if 'Abdallâh be gone, and his place a void,
no weakling unsure of hand, and no holder-back was he !
Alert, keen, his loins well girt, his leg to the middle bare,
unblemished and clean of limb, a climber to all things high :
No wailer before ill luck : one mindful in all he did
to think how his work to-day would live in to-morrow's tale :

Content to bear hunger's pain though meat lay beneath his hand:
to labour in ragged shirt that those whom he served might rest.
15 If Dearth laid her hand on him, and Famine devoured his store,
he gave but the gladlier what little to him they spared.
He dealt as a youth with Youth, until, when his head grew hoar
and age gathered o'er his brow, to Lightness he said—Begone!
Yea, somewhat it soothes my soul that never I said to him
'Thou liest,' nor grudged him aught of mine that he sought of me.

Ḥam. pp. 377—80.

NOTES.

Metre *Ṭawîl*, as in No. II: a short syllable occurs in the third place of the second foot of the hemistich three times in this poem, *viz.*, in vv 1,*a*, 3,*b*, and 12,*a*, which is exceptionally frequent.

The author, Dureyd son of eṣ-Ṣimmeh son of el-Ḥârith son of Bekr son of 'Alqameh son of Judâ'ah son of Ghaziyyeh son of Jusham son of Mo'âwiyeh son of Bekr son of Hawâzin, was a man of great note in the days of Moḥammed's boyhood and youth. His father eṣ-Ṣimmeh had led the Benû Jusham in the War of the Fijâr on the day of en-Nakhleh, where the future prophet, then aged 14, was present (A. D. 585). Eṣ-Ṣimmeh (whose real name was Mo'âwiyeh, *eṣ-Ṣimmeh* being a title meaning "the Serpent") had, according to the Aghânî, five sons by his wife Reyḥâneh daughter of Ma'dî-kerib, a woman of el-Yemen: their names were Dureyd, 'Abd-Yaghûth, Qeys, Khâlid, and 'Abdallah, all warriors of prowess and renown. The stock of Hawâzin had their abode in the mountains and plains to the East of Mekkeh, and were divided into numerous branches, of which the Benû Thaqîf of Ṭâ'if, a strong town no great distance from Mekkeh, the Benû Suleym, the Benû Jusham, the Benû Sa'd ibn Bekr (among whom the Prophet was fostered), the Benû Naṣr ibn Mo'âwiyeh and the Benû Hilâl were the chief. These were engaged in frequent contests among themselves, but, at the time when the event to which the poem relates occurred, were all united against the great stock of Ghaṭafân, who dwelt to the north of them ('Abs, Ḍubyân, 'Abdallâh, Ashja'). It were too long to tell here all that is recorded of Dureyd: his encounter with Rabî'ah son of Mukeddem, of the Benû Firâs, on the Day of el-Akhram (one of the noblest stories of the Ignorance), his wooing of the poetess el-Khansâ, or his heroic death at the Battle of Ḥoneyn (A. H. 8.—A. D. 630). His fame as a poet rests chiefly on his affection for his brother 'Abdallâh, in his grief for whose death he composed much verse which has survived, and is conspicuously excellent among the poetry of that day.

In or about the year 610 A. D., a company of the Benû Jusham and the Benû Naṣr ibn Mo'âwiyeh, both of Hawâzin, commanded by 'Abdallâh, the youngest brother of Dureyd, led a foray against Ghaṭafân, and carried off a great number of camels. They were returning from this expedition with their booty, and had reached the border of the territory of Hawâzin, at a place called *Mun'araj el-Liwà* ("the place where the sandhills curve round," see v. 5 of the poem), when 'Abdallâh proposed that they should halt and divide the spoil. Dureyd, who was with them, dissuaded him, pointing out that they were not yet safe from pursuit. But 'Abdallâh persisted, and swore that he would not leave the spot, till he had taken his fourth part of the captures, and feasted his companions on a *naqî'ah*—a camel slain by the leader of an expedition from his share of the spoil and divided among his fellows. Next day, while they were preparing the feast, a cloud of dust was seen. A sentinel posted on the sandhills cried—"I see horsemen coming clad in yellow." "They are of Ashja'," said 'Abdallâh, "I care not for them." "I see others," said the sentinel, "who have the points of their lances set between the ears of their horses." "These are of Fezârah," said Dureyd. "And there come also others who gallop along, trailing their lances on the ground." "These are of 'Abs, and Death comes with them!" said the elder brother.

Hardly had 'Abdallâh's men time to mount, when the foe were upon them. 'Abdallâh fell at the very beginning of the fight, slain by a man of the house of Qârib, of 'Abs. Dureyd, fighting to the last over the prostrate body of his brother, fell grievously wounded, and his companions fled, leaving the camels, which the men of Ghaṭafân recovered. When the fight was over, two men of 'Abs, Zahdam and his brother Qeys, collectively known as *ez-Zahdamâni*, "the two Zahdams," with a rider of Fezârah named Kardam, passed by Dureyd, who was lying among the dead. Dureyd, who was still conscious, heard the elder Zahdam say to Kardam—"Methinks Dureyd is not yet dead: I seemed to see his eyelid move. Get thee down, and finish him." "Nay, he is dead," said Kardam. "Get thee down, I tell thee, and see if he yet breathes." Kardam dismounted and went up to Dureyd: he found him still breathing; but, yielding to compassion, he returned and said: "He is dead, quite dead." Notwithstanding this assurance, Zahdam, before departing, pierced with his lance the body of Dureyd. By a singular chance, this new wound, by opening a passage to a quantity of blood which had gathered within from an inward hurt, and so freeing the lungs, was the means of saving Dureyd's life. When at nightfall the enemy returned home, he dragged himself towards the lands of his tribe, and met a wandering band of men of Hawâzin, who received him and tended him until his wounds were healed.

Some time after, several men of 'Abs and Fezârah, on their way to Mekkeh during the month of pilgrimage, passed by the country where Dureyd dwelt. Although it was the time when war was forbidden, they did not feel wholly secure, and had hidden their faces in their *lithâms*, the handkerchiefs with which the Bedawîs cover their heads, leaving only their eyes visible. Dureyd perceived them, and went forth to meet them—"What men are ye?" he asked. "Is it I of whom thou askest?" answered one of the travellers. Dureyd recognized the voice of Kardam;—"Ah," he cried, "there is no need to ask further: thou and these who follow thee have nothing to fear from me." Then he embraced him, and gave him a horse, a sword, and a lance, and said, "Take this as a requital of the kindness which thou shewedst to me on the day of el-Liwà."*

v. 1. 'Âriḍ is said by et-Tebrîzî to be another name of 'Abdallâh, who was likewise called Khâlid (but according to the Aghânî, Khâlid was a fourth brother of Dureyd's). The Benu-s-Saudâ were the family of Dureyd and 'Abdallâh, whose mother Reyḥâneh was very dark, being of el-Yemen, where African blood was largely mingled with Arab: *es-Saudâ* means "the black woman."

v. 2. "Laden," *mudajjaj:* from *dajja*, "he walked slowly, as one carrying a heavy load." The word therefore means "fully armed."

The most esteemed coats of mail were brought from Persia, and in that country from Soghdiana (*es Sughd*); see Ḥamâseh, p. 349:—

Qurûmun tesâmà min Nizârin, 'aleyhimî
muḍâ'afatun min nesji Dâ'ûda wa-s-Sughdi.

"Warriors who trace their lineage from Nizâr, and on them
double coats of mail of the weaving of David and from es-Sughd."

(David is said by Arab tradition, embodied in the Qurân, Sûrah xxi, 80, to have been taught by God the art of weaving mail.) The best swords came from India (*hindî, muhenned*) and el-Yemen (imported thither by sea from the former country); and the best spears were made at el-Khaṭṭ in el-Baḥrân, from bamboos also brought from India.

vv. 4 and 5 are given in inverse order in et-Tebrîzî's text: that in which I have placed them is clearly the right one.

Ghaziyyeh, as will be seen from the genealogy of Dureyd given above, was the name of the family in Jusham to which he and his brethren belonged.

---

* This history is taken almost word for word from Caussin de Perceval, *Essai*, ii, pp. 551-554, who again in like manner follows Fresnel, Jour. Asiat Février 1838, who translates from the Aghânî. It would be difficult to better the work of two such accomplished hands. For the original, see Agh. ix, 3-4.

v. 7. "The weaver's comb:" *eṣ-ṣayâṣî*, plural of *ṣîṣiyeh*, which is the comb used by the weaver to push up the threads of the woof into the web, so as to make the fabric close.

v. 8. "A camel," *đât-el-bawwi:* the *baww* is the stuffed skin of a young camel (or with a cow, a calf,) cast before a she-camel who has lost her young one in order to induce a flow of milk.

v. 12. "Alert, keen, his loins well girt"—all one attempt to render *kemîsh-el-'izâr*. *Kemîsh* means properly light, quick, active, and is joined to *'izâr* (the trailing waistcloth with which an Arab girt himself, loose and flowing in peace, tightly wound and raised in war or serious business) by a contracted construction of which examples are frequent. "His leg to the middle bare," as would naturally be the result of girding up the *'izâr*. "A climber to all things high:" *ṭallâ'u 'anjudi*, a proverbial phrase for a man who seeks fame and glory. This verse is found with another reading later on in the Hamâseh (p. 765):—

Qaṣîru-l-'izâri, khârijun niṣfu sâqihi,
ṣabûrun 'ala-l-'azzâ'i, ṭallâ'u 'anjudi

i. e.,

"with his *izâr* girt up short, his leg bare up to the middle,
patient in face of hardship, a climber to all things high."

v. 17. This most touching line has been appropriated by another poet, a contemporary of, but considerably younger than, Dureyd, Ṣakhr son of 'Amr, of the Benû Suleym, brother of the poetess el-Khansâ whom Dureyd wooed. In a lament over his brother Mo'âwiyeh, given in the Ḥamâseh, p. 489, he says—

Waṭayyaba nefsî 'annanî lam 'aqul lahu
keđebta, walam 'abkhal 'aleyhi bimâliyâ.

VI.

قال دريد بن الصمة

تَقُولُ أَلَا تَبْكِي أَخَاكَ وَقَدْ أَرَى   مَكَانَ ٱلْبُكَا لَكِنْ بُنِيتُ عَلَى ٱلصَّبْرِ
فَقُلْتُ أَعَبْدَ ٱللّٰهِ أَبْكِي أَمِ ٱلَّذِي   لَهُ ٱلْجَدَثُ ٱلْأَعْلَى قَتِيلَ أَبِي بَكْرِ
وَعَبْدَ يَغُوثَ تَحْجُلُ ٱلطَّيْرُ حَوْلَهُ   وَعَزَّ ٱلْمُصَابُ حَثْوُ قَبْرٍ عَلَى قَبْرِ

أَبَى الْقَتْلُ إِلَّا آلَ صِمَّةَ إِنَّهُمْ   أَبَوْا غَيْرَهُ وَالْقَدْرُ يَجْرِي إِلَى الْقَدْرِ
٥ فَإِمَّا تَرَيْنَا لَا تَزَالُ دِمَاؤُنَا   لَدَى وَاتِرٍ يَسْعَى بِهَا آخِرَ الدَّهْرِ
فَإِنَّا لَلَحْمُ السَّيْفِ غَيْرَ نَكِيرَةٍ   وَنُلْحِمُهُ حِينًا وَلَيْسَ بِذِي نُكْرِ
يُغَارُ عَلَيْنَا وَاتِرِينَ فَيُشْتَفَى   بِنَا إِنْ أُصِبْنَا أَوْ نُغِيرُ عَلَى وِتْرِ
قَسَمْنَا بِذَاكَ الدَّهْرَ شَطْرَيْنِ بَيْنَنَا   فَمَا يَنْقَضِي إِلَّا وَنَحْنُ عَلَى شَطْرِ

Dureyd son of eṣ-Ṣimmeh.

'Weepest thou not,' said she, 'for thy brother?' Ay, and sooth enough
cause there is for tears, but that my frame was builded to endure.
'Whom wouldst thou that I should weep for,' said I,—''Abdallâh the dear,
or the slain of Abû Beker, he whose grave is on the height,
'Or that other, 'Abd-Yaghûth, round whom the ravens croak and hop?
Sore bereavement, load of sorrow—one grave filled, another dug!'
Slaughter chose from all men born the race of Ṣimmeh for her own:
they chose her, and would none other: so fate goes to fated end.
5 Yea, and if our blood be ever end and aim of vengeful hands,
striving day by day to spill it till the days shall be no more,
Flesh to feed the Sword are we, and unrepining meet our doom:
well we feed him, slain or slaying, joyfully he takes our food!
Hearts are cured of rancour-sickness, whether men against us war,
or we carry death among them: dying, slaying, healing comes.
So we halve our days between us, we and all men else our foes:
no day passes but it sees us busy with this deed or that.

Ḥam. pp. 380-2.

NOTES.

The metre is *ṭawîl* of the first form, which only differs from that of Nos. II, IV, and V by having, in the last foot of the second hemistich of each verse, a long syllable instead of a short one in the third place, thus:

⏑ – ⏓ | ⏑ – – – | ⏑ – ⏓ | ⏑ – ⏑ – || ⏑ – ⏓ | ⏑ – – – | ⏑ – ⏓ | ⏑ – – –

The translation is in the ordinary long English trochaic measure.

The poet represents himself as addressed by a woman, who blames him for not shewing sorrow for the death of his brethren. This "blaming woman," *'âđileh*, is a stock figure in old Arab poetry, whether her office be to reprove a man for his extravagance and excess in wine, to cast doubt on his courage, to question the nobility of his race, or any other of the kind. Instances will be found on almost every page of the Ḥamâseh. In later poetry this usage disappears, the seclusion of women under el-Islâm having made it inconsistent with the manners of the time.

Dureyd, as stated in the notes to No. V, had four brothers, all of whom fell in fight, as he did himself. The three here mentioned are 'Abdallâh, the circumstances of whose death have just been told, Qeys, who was slain in a combat with the men of Abû Bekr ibn Kilâb, a branch of the Benû 'Âmir, and 'Abd-Yaghûth, who died in battle with the Benû Murrah of Ghaṭafân.

v. 2. The licence by which, for the sake of the metre, *Beker* is written for *Bekr* is one admissible and frequently used in the original Arabic.

v. 3. 'Abd-Yaghûth: *Yaghûth*, "The Helper," was the name of an idol worshipped by the Yemenite tribes of Meðḥij, who bordered Hawâzin on the south. Most probably the real name of the other brother, called in the text 'Abdallâh, was *'Abd-el-Lât*, "Servant of el-Lât." That many such pagan names mentioned in the old poems were changed when el-Islâm became prevalent is certain.

v. 4. Et-Tebrîzî states that not only Dureyd's father, Mo'âwiyeh son of el-Ḥârith, was called *eṣ-Ṣimmeh*, "The Serpent," but also his uncle Mâlik: the latter was known as "eṣ-Ṣimmeh the greater," and Dureyd's father as "eṣ-Ṣimmeh the less."

v. 7. "Hearts are cured of rancour-sickness": *yushtafà binâ*. The desire for vengeance is represented in old Arab verse as a burning fever, and the satiating of it as recovery from a disease. So one says *ishtefeytu bihi*—"I was cured by means of him," meaning "I wreaked my vengeance on him and assuaged my desire thereof." The idiom is of constant occurrence.

The whole poem is considered by the old critics (Aghânî, ix. 3) a splendid example of what the Arabs call *ṣabr*, endurance, hardihood, heroic temper; and Dureyd's life was not unworthy of it. For his death, see the account of the Battle of Ḥoneyn in Caussin de Perceval, *Essai*, iii, pp. 245—253, which in this incident follows the Aghânî, ix, 14-16.

VII.

قال عبدة بن الطبيب العبشمي

عَلَيْكَ سَلَامُ اللّهِ قَيْسَ بْنَ عَاصِمٍ   وَرَحْمَتُهُ مَا شَاءَ أَنْ يَتَرَحَّمَا
تَحِيَّةَ مَنْ غَادَرْتَهُ غَرَضَ الرَّدَى   إِذَا زَارَ عَنْ شَحْطٍ بِلَادَكَ سَلَّمَا
فَمَا كَانَ قَيْسٌ هُلْكُهُ هُلْكَ وَاحِدٍ   وَلَاكِنَّهُ بُنْيَانُ قَوْمٍ تَهَدَّمَا

'Abdeh son of eṭ-Ṭabîb.

On thee be the peace of God, O Qeys son of 'Âṣim, and
  His mercy, the manifold, so long as He will it shew!
—The greeting of one whom thou hast left here the mark of Death,
  who went far away, and comes to greet thee though in thy grave.
When Qeys died, it was not one who went down the way of Death:
  a People it was whose house with his death in ruin fell.
Ḥam. pp. 367-8.

NOTES.

Metre *Ṭawîl*, second form (as in Nos. II, IV, and V).

'Abdeh son of eṭ-Ṭabîb was a *Mukhaḍrim*, or a poet who lived both before and after the promulgation of el-Islâm. He belonged to the family of 'Abbushems son of Sa'd son of Zeyd-Menâh son of Temîm, and was an object of the bounty of Qeys son of 'Âṣim, the great chief of Temîm in the days of the Prophet, whose death he here laments. The third verse is often quoted as the perfection of posthumous praise (Aghânî, xviii. 163).

Qeys belonged to that division of the sub-tribe of Temîm, Sa'd son of Zeyd-Menâh, called the Benû Muqâis. He is first heard of on the Day of Sitâr (about 606 A. D.), when he defeated Ḥanîfeh and slew Qatâdeh son of Meslemeh their chief. His wife, Menfûseh, bore him many children, and he is said to have been the means of reviving in those days the evil custom of female infanticide, which had almost died out among the Arabs, by putting to death all his daughters. He fought against Meδḥij at el-Kulâb (612 A. D.), when 'Abd-Yaghûth chief of the Bel-Ḥârith was slain. In A. H. 9 (A. D. 630) he appeared at el-Medîneh at the head of a great deputation from the whole tribe of Temîm, when a famous contest in verse took place before Moḥammed between Zibriqân son of Bedr, the poet of Temîm, and Ḥassân son of Thâbit, the poet of the Anṣâr. This ended in Temîm accepting el-Islâm in a body, when Qeys was made receiver of the poor-rate (*zekât* or *ṣadaqât*) for his tribe, the Benû Sa'd. After the death of the Prophet (A. D. 632), he was one of those who revolted, with many others of Temîm, against Abû Bekr, but shortly afterwards submitted himself and joined in the expedition led by el-'Alâ el-Ḥaḍramî against el-Baḥrân, which crushed opposition in that quarter. I have not been able to ascertain when he died.

VIII.

قال مالك بن الريب

تَذَكَّرْتُ مَنْ يَبْكِي عَلَيَّ فَلَمْ أَجِدْ   سِوَى السَّيْفِ وَالرُّمْحِ الرُّدَيْنِيِّ بَاكِيَا
وَأَشْقَرَ خِنْذِيذٍ يَجُرُّ عِنَانَهُ   إِلَى الْمَاءِ لَمْ يَتْرُكْ لَهُ الْمَوْتُ سَاقِيَا

Mâlik son of er-Reyb.

I thought who would weep for me, and none did I find to mourn
 but only my sword, my spear, the best of Rudeyneh's store,
And one Friend, a sorrel steed, who goes forth with trailing rein
 to drink at the pool, since Death has left none to draw for him.

Ḥam. p. 247, quoted in Commentary.

NOTES.

Metre *Ṭawîl,* as in No. II.

These lines are quoted in et-Tebrîzî's commentary on p. 247 of Freytag's edition of the Ḥamâseh, in illustration of the word *k͟hinḏîd*, a stallion. The poem from which they are taken is a lament (*marthiyeh*) by Mâlik son of er-Reyb over his own death, a portion of which is quoted in the Kitâb-el-Aghânî (xix, 162), and the whole of which is to be found in the 'Iqd-el-Ferîd of Ibn 'Abd Rabbihi (ii, 10-11). The author was a brigand of the tribe of Mâzin who roamed over the country of Temîm in the neighbourhood of el-Baṣrah during the early years of the Umawî dynasty. When Mo'âwiyeh sent Sa'îd son of 'Othmân son of 'Affân as his viceroy to Khurâsân, the latter on his way to Persia met Mâlik, and, struck by his noble mien and gallant bearing, invited him to accompany him. Mâlik, however, fell sick (some say, was stung by a serpent), and died on the way to Khurâsân. He is best known for the grand poem of which these verses form a part, and for his love for his daughter, shewn in a touching piece of verse quoted in the Aghânî (xix, 167).

v. 1. "Made by Rudeyneh," *Rudeynî,* is a stock epithet of spears; Rudeyneh, tradition says, was a woman of el-Khaṭṭ in el-Baḥrân, who was most expert at straightening spears: whence every good spear is called by her name.

IX.

قال مويلك المزموم يرثى امراته ام العلاء

اُمْرُرْ عَلَى الْجَدَثِ الَّذِي حَلَّتْ بِهِ   أُمُّ الْعَلَاءِ فَنَادِهَا لَوْ تَسْمَعُ
أَنَّي حَلَلْتِ وَكُنْتِ جِدَّ فَرُوقَةٍ   بَلَدًا يَمُرُّ بِهِ الشُّجَاعُ فَيَفْزَعُ
صَلَّى عَلَيْكِ اللَّهُ مِنْ مَفْقُودَةٍ   إِذْ لَا يُلَايِمُكِ الْمَكَانُ الْبَلْقَعُ
فَلَقَدْ تَرَكْتِ صَغِيرَةً مَرْحُومَةً   لَمْ تَدْرِ مَا جَزَعٌ عَلَيْكِ فَتَجْزَعُ
٥ فَقَدَتْ شَمَايِلَ مِنْ لِزَامِكِ حُلْوَةً   فَتَبِيتُ تُسْهِرُ أَهْلَهَا وَتُفَجِّعُ
وَإِذَا سَمِعْتُ أَنِينَهَا فِي لَيْلِهَا   طَفِقَتْ عَلَيْكِ شُؤُونُ عَيْنِي تَدْمَعُ

Muweylik el-Mezmûm.

Take thou thy way by the grave wherein thy dear one lies
  —Umm-el-'Alâ—, and lift up thy voice: ah if she could hear!
How art thou come—for very fearful wast thou—to dwell
  in a land where not the most valiant goes but with quaking heart?
God's love be thine and His mercy, O thou dear lost one!
  not meet for thee is the place of shadow and loneliness.
And a little one hast thou left behind—God's ruth on her!
  she knows not what to bewail thee means, yet weeps for thee.
5 For she misses those sweet ways of thine that thou hadst with her,
  and the long night wails, and we strive to hush her to sleep in vain.
When her crying smites in the night upon my sleepless ears,
  straightway mine eyes brim-full are filled from the well of tears.

Ḥam. pp. 409-10.

NOTES.

The metre is the *Kâmil*, scanned thus:

$$\overset{-}{\cup\cup}-\cup- \mid \overset{-}{\cup\cup}-\cup- \mid \overset{-}{\cup\cup}-\cup- \parallel \overset{-}{\cup\cup}-\cup- \mid \overset{-}{\cup\cup}-\cup- \mid \overset{-}{\cup\cup}-\cup-$$

The English imitates the Arabian measure.

I have ascertained nothing of the author of these lines. *Muweylik* is the diminutive of *Mâlik*, and *el-Mezmûm* means "bridled,"—probably a nickname given for some peculiarity of feature. The verses were evidently composed after el-Islâm. Umm-el-'Alâ was the poet's wife, whose loss he mourns.

v. 4. I have taken *merḥûmeh* in the sense in which it is used when one dead is spoken of—as a prayer that God's mercy may light on him or her.

v. 7. "The well of tears," *shu'ûnu 'eynî : shu'ûn*, plural of *sha'n*, are the tear-ducts of the eye.

X.

قال خلف بن خليفة

أُعَاتِبُ نَفْسِي أَنْ تَبَسَّمْتُ خَالِيًا   وَقَدْ يَضْحَكُ الْمَوْتُورُ وَهْوَ حَزِينُ
وَبِالدَّيْرِ أَشْجَانِي وَكَمْ مِنْ شَجٍ لَهُ   دُوَيْنَ الْمُصَلَّى بِالْبَقِيعِ شُجُونُ
رُبًى حَوْلَهَا أَمْثَالُهَا إِنْ أَتَيْتَهَا   قَرَيْنَكَ أَشْجَانًا وَهُنَّ سُكُونُ
كَفَى الْهَجْرَ أَنَّا لَمْ يَضِحْ لَكَ أَمْرُنَا   وَلَمْ يَأْتِنَا عَمَّا لَدَيْكَ يَقِينُ

Khalaf son of Khalîfeh.

I reprove my soul when no man is by for every smile:
  yea, a man may laugh, and be sick at heart with a sorrow sore.
In ed-Deyr they lie, my lost ones: many another too
  knows well the pain el-Muṣallà hides in its slope of graves!
Hillocks, around them a many like: and if thou go there,
  they will feed thee full of the bread of woe though they stir no whit.
Far away enough are we from thee, since it recks thee naught
  how days fly here, nor we know aught sure how they go with thee!

Ḥam. p. 404.

NOTES.

The Arabic is in the *Ṭawîl* of the third form; the second hemistich is scanned thus:

◡ – ⏓ | ◡ – – – | ◡ – ◡ | ◡ – –

The English adopts the form of the *Kâmil*, as in No. IX.

The author, Khalaf son of Khalîfeh, was an inhabitant of el-Medîneh, and is mentioned as an authority on the traditions respecting the Prophet.

v. 1. I have, following the commentary, joined *khâliyan* with *o‘âtibu*, in the sense of *alone*: but it might easily be taken with *tebessemtu*, in the sense of "light-hearted, as if free from care."

v. 2. Ed-Deyr is the name, apparently, of the spot where his dear ones were buried. It is the usual word for a Christian monastery. *El-Muṣallà*, "the place of prayer", was the name of a small mosque which stood at the top of a slope called *baqî‘-el-Gharqad*, used as the cemetery of el-Medîneh.

XI.

قال عبدُ الله بن ثعلبة الحنفى

لِكُلِّ أُنَاسٍ مَقْبَرٌ بِفِنَائِهِمْ   فَهُمْ يَنْقُصُونَ وَٱلْقُبُورُ تَزِيدُ
وَمَا إِنْ يَزَالُ رَسْمُ دَارٍ قَدْ اخْلَقَتْ   وَبَيْتٌ لِمَيْتٍ بِٱلْفِنَاءِ جَدِيدُ
هُمُ جِيرَةُ ٱلْأَحْيَاءِ أَمَّا جِوَارُهُمْ   فَدَانٍ وَأَمَّا ٱلْمُلْتَقَى فَبَعِيدُ

‘Abdallâh son of Tha‘lebeh el-Ḥanafî.

Before the door of each and all a slumber-place is ready set:
  men wane and dwindle, and the graves in number grow from day to day;
And ever more and more outworn the traces fade of hearth and home,
  and ever yonder for some dead is newly built a house of clay.
Yea, neighbours are they of the living: near and close their fellowship;
  but if thy soul would win their converse, thou must seek it far away.

Ḥam. p. 405.

NOTES.

The metre is the third form of the *Ṭawîl*, as in No. X.

Of the author I know nothing. He was a member of the tribe of Ḥanîfeh, an important division of Bekr who dwelt in el-Yemâmeh in the southern part of the central mountain country of Nejd. These verses are frequently quoted (*e. g.*, 'Iqd, ii, 6), but their exact date I have not been able to ascertain: Ibn-Khallikân says that they were repeated by Ya'qûb son of Dâ'ûd, once the Wezîr of el-Mahdî, when on his release from prison in A. H. 175 he heard of the death of his brothers.

v. 1. The word *finâ* ("before the door") means the space in front of the tent. The same word is rendered "yonder" in v. 2.

XII.

قال عمرو بن قمية

يَا لَهْفَ نَفْسِى عَلَى الشَّبَابِ وَلَمْ   أَفْقِدْ بِهِ إِذْ فَقَدْتُهُ أَمَمَا
إِذْ أَسْحَبُ الرَّيْطَ وَالْمُرُوطَ إِلَى   أَدْنَى تِجَارِى وَأَنْفُضُ اللِّمَمَا
لَا تَغْبِطِ الْمَرْءَ أَنْ يُقَالَ لَهُ   أَمْسَى فُلَانٌ لِسِنِّهِ حَكَمَا
إِنْ سَرَّهُ طُولُ عُمْرِهِ فَلَقَدْ   أَضْحَى عَلَى الْوَجْهِ طُولُ مَا سَلِمَا

'Amr son of Qamî'ah.

Alas my soul for Youth that's gone—
  no light thing lost I when he fled!
What time I trailed my skirts in pride,
  and shook my locks at the tavern's door.
Nay, envy not a man that men
  say, 'Age has made him ripe and wise:'
Though thou love life and live long safe,
  long living leaves its print on thee.

Ḥam. p. 504.

NOTES.

The metre of this poem is the somewhat rare one called *Munsariḥ*, which the old prosodists divide thus:—

— — ◡ — | — — — ◡ | — — ◡ — ‖ — — ◡ — | — — — ◡ | — ◡ ◡ —

The existence of a metrical foot *maf'ûlâtu* is however very questionable. The poem itself exhibits the following scansion :—

— — ◡ — — ◡ — ◡ — ◡ ◡ — ‖ — — ◡ — — ◡ — ◡ — ◡ ◡ —

Now, if we compare this with the *Besîṭ* :—

$$\genfrac{}{}{0pt}{}{-}{\smile}\ \genfrac{}{}{0pt}{}{-}{\smile}\ \smile\ - \mid \genfrac{}{}{0pt}{}{-}{\smile}\ \smile\ - \mid -\ -\ \smile\ - \mid \smile\ \smile\ - \parallel \genfrac{}{}{0pt}{}{-}{\smile}\ \genfrac{}{}{0pt}{}{-}{\smile}\ \smile\ - \mid \genfrac{}{}{0pt}{}{-}{\smile}\ \smile\ - \mid -\ -\ \smile\ - \mid \smile\ \smile\ -$$

we find that the two coincide, except in the third foot of the *Besîṭ*, which in our poem appears as ◡ — instead of — — ◡ —. I am therefore inclined to regard this metre as a shortened form of the *Besîṭ*, and to divide it thus :—

— — ◡ — | — ◡ — | ◡ — | ◡ ◡ — ‖ — — ◡ — | — ◡ — | ◡ — | ◡ ◡ —

Although the first syllable of the last foot of each hemistich is short, it is considered by Arabian metrists to represent an original long syllable : that is, the foot *fâ'ilun* is shortened to *fa'ilun*. It therefore receives a stress in utterance which makes the foot something more than a mere anapæst. The first foot may show the varieties ◡ — ◡ — and — ◡ ◡ —, but these are not found in this poem.

The piece is interesting as one of the oldest specimens of Arabic poetry that have come down to us. 'Amr son of Qamî'ah, its author, was grandson of Sa'd son of Mâlik son of Ḍubey'ah son of Qeys son of Tha'lebeh, of the tribe of Bekr, who was a leader in the war of Basûs, and an ancestor of the poet Ṭarafeh. He is claimed as the first of Nizâr (that is, of the Ma'addic Arabs as opposed to those of el-Yemen) who made regular *qaṣîdehs*, and as the master in this art of Imra'-el-Qeys. He reached a great age, and was the companion of Imra'-el-Qeys in his journey to the Court of the Greek Emperor, which C. de Perceval fixes in 535 A. D. : he died, however, on the way in Asia Minor, and was called by the Arabs *'Amr eḍ-ḍâ'i'*, that is, " 'Amr the lost." Two verses of his are quoted by et-Tebrîzî on p. 131 of the Ḥamâseh, which are in a form of the *Besîṭ* closely allied to the *Munsariḥ*, and quite in the vein of those given above :—

El-ka'su mulkun liman 'a'malahâ
  wa-l-mulku minhu ṣaghîrun wa-kebîr :
minha-ṣ-ṣabûḥu-l-latî tetrikunî
  leytha 'ifirrîna wa-l-mâlu kethîr.

" The cup is a kingdom to him who plies it,
  and his kingdom, though little, how vast it is !
Thereout I drink in the morning, and am
  a lion of 'Ifirrîn, my wealth overflowing."

i. e., the morning draught gives me both valour and generosity, so that in giving I am as a king.

v. 1. "Light thing," *'amaman:* that is, something near at hand, easily to be grasped and recovered.

v. 2. The translation fails to give the full force of the original here, which may thus be rendered:—"What time I trailed my robes of silk and wool to the nearest of my wine-sellers, and shook loose my locks." The difference between *reyṭ* (plural of *reyṭah*) and *murûṭ* (plural of *mirṭ*) is not certain: both were sumptuous garments, worn over the under-clothing, and long in the skirt. "The *nearest* of my wine-sellers" shews that he was a wealthy man, and had many to supply him with wine. The use of *tijâr* (plural of *tâjir*), which properly means traders in general, in the exclusive sense of wine-sellers, is worthy of notice, though frequent in the poetry of the pagan time.

v. 3. "Ripe and wise": so I render *ḥakam,* which properly means one who on account of his years and his wisdom is chosen as a judge or arbiter in disputes between tribe and tribe, or man and man. Such a *ḥakam* was the ancient 'Âmir son of eḍ-Ḍarib, ancestor on the mother's side of the tribes of Thaqîf and 'Âmir son of Ṣa'ṣa'ah, who on account of the drowsiness caused by great age required to be roused to attention by a thrust from a stick (or, as some say, by one of his sons knocking one stick against another to awake him). See Ḥam., p. 98, and el-Meydânî, at the proverb *inna-l-'aṣà quri'at liḍi-l-ḥilmi* (i, 32, Bûlâq edn.).

v. 4. Here also I have diverged from the phrase, but not the sense, of the original, which, literally rendered, is—"If the length of his long life has delighted him, yet there has become apparent in his face the long time that he has been saved (from death)." In changing the third to the second person, I have merely put the general result intended in another way exactly equivalent.

XIII.

قال سلمى بن ربيعة

إِنَّ شِوَاءً وَنَشْوَةً   وَخَبَبَ الْبَازِلِ الْأَمُونِ
يُجَشِّمُهَا الْمَرْءُ فِى الْهَوَى   مَسَافَةَ الْغَائِطِ الْبَطِينِ
وَالْبِيضَ يَرْفُلْنَ كَالدُّمَى   فِى الرَّيْطِ وَالْمُذْهَبِ الْمَصُونِ
وَالْكُثْرَ وَالْخَفْضَ آمِنًا   وَشِرْعَ الْمِزْهَرِ الْحَنُونِ

٥ مِنْ لَذَّةِ الْعَيْشِ وَالْفَتَى   لِلدَّهْرِ وَالدَّهْرُ ذُو فُنُونِ
وَالْعُسْرُ كَالْيُسْرِ وَالْغِنَى   كَالْعُدْمِ وَالْحَيُّ لِلْمَنُونِ
أَهْلَكْنَ طَسْمًا وَبَعْدَهُ   غَذِيَّ بَهْمٍ وَذَا جُدُونِ
وَأَهْلَ جَاشٍ وَمَأْرِبٍ   وَحَيَّ لُقْمَانَ وَالتُّقُونِ

Sulmî son of Rabî'ah.

Roast flesh, the glow of fiery wine,
  to speed on camel fleet and sure
As thy soul lists to urge her on
  through all the hollow's breadth and length;
White women statue-like that trail
  rich robes of price with golden hem,
Wealth, easy lot, no dread of ill,
  to hear the lyre's complaining string—
5 These are Life's joys. For man is set
  the prey of Time, and Time is change.
Life strait or large, great store or naught,
  all's one to Time, all men to Death.
Death brought to naught Ṭasm long ago,
  Ghaðî of Bahm, and Đû Judûn,
The race of Jâsh and Mârib, and
  the House of Luqmân and et-Tuqûn.

Ḥam. pp. 506-7.

NOTES.

The metre of this poem is unique, and does not occur among the forms settled either by el-Khalîl son of Aḥmed, the founder of Arabic prosody, or by Sa'îd son of Mas'adeh el-Akhfash. Et-Tebrîzî considers it a species of *Besîṭ*. The following is its scheme:—

⏓ ⏓ ⏑ – | – ⏑ – | ⏑ – ‖ ⏓ ⏓ ⏑ – | – ⏑ – | ⏑ – –

The author, Sulmî son of Rabî'ah, belonged to the family of the Benu-s-Sîd ("Sons of the Wolf") of Ḍabbeh, a tribe descended from Muḍar by Ṭâbikhah son of Ilyâs. The men of Ḍabbeh were one of the *Ribâb*, or five confederate tribes all descended from Ṭâbikhah, and closely allied with Temîm, among whom they dwelt. There is another longer poem by the same author, quite in the spirit of this, at pp. 274-6 of the Ḥamâseh. I have not been able to ascertain when he lived, but it must have been in the days of the Ignorance.

v. 1. "Camel," *bâzil*, properly a she-camel nine years old, when she is strongest and fittest to bear fatigue. *Khabab* means a quick trot.

v. 3. "Statue-like," *ka-d-dumà:* this comparison is found more than once in the poems of Imra'-el-Qeys. There is a strangeness about it in the mouth of a Desert Arab. Imra'-el-Qeys was a prince who had travelled and seen strange lands, and among them probably the sculptures of the Greeks. The Ḍabbî, who had a taste for the pleasures of the town, may also have seen Greek statues in Syria, though his poem at pp. 274-6 shews him as a genuine Bedawî.

v. 7. Ṭasm was one of the old lost races of Arabia, who dwelt, with a sister tribe named Jedîs, in a valley called el-Jaww in el-Yemâmeh, in southern Nejd. A quarrel broke out between Ṭasm and Jedîs, in which the latter tribe massacred the whole of the former, except one man named Riyâḥ, who escaped and invoked the aid of Ḥassân son of As'ad, the Tubba' of el-Yemen. This king led an army against Jedîs, and exterminated the whole race (see the Ḥimyerite Qaṣîdeh, vv. 79-80). Nothing certain is known of the date of this event, and Ṭasm to an Arab was but the name of a people that perished long ago. Of Ghaðî of Bahm also nothing is known but his name: he seems to have been a prince of Irem, of the race of 'Âd, another lost people, and is mentioned together with Luqmân and Ðû Jeden in a verse cited by el-Jauharî:

Lau 'annanî kuntu min 'Âdin wamin 'Iremin
Ghaðiyya Bahmin wa-Luqmânan wa-Ðâ Jedeni.
"If I had been a man of the race of 'Âd and of Irem,
Ghaðî of Bahm or Luqmân or Ðû Jeden."

Ðû Judûn probably stands for Ðû Jeden, the surname of a king of Ḥimyer whose name was 'Alas son of el-Ḥârith. The Arabs say that Ðû Jeden was so named from his beautiful voice, and that he was expert in song. The name is however, like all the names of Ḥimyer compounded with *Ðû*, a local one, Jeden being the city or fortress after which the Prince was called. The name Ðû Jeden is found in Halévy's Ḥimyerite inscriptions: see Major Prideaux's Edn. of the Ḥimyerite Qaṣîdeh, p. 58. There was another Ðû Jeden called el-Akbar, the greater, whose name was 'Alqameh, of much older date, a cousin of Bilqîs the Queen of Sebà, whom Arab legend makes the contemporary of Solomon.

v. 8. Of the race of Jâsh we likewise know nothing, and the commentator does not help us. Freytag suggests that the right reading is Ḥâsh, given in the Qâmûs as the name of a place in el-Yemen.

Mârib is the name of the famous dyke in el-Yemen, the bursting of which caused the dispersion northwards of all the tribes who dwelt in its neighbourhood. This dyke was built by Luqmân, king of the second 'Âd (that is, the remnant which remained on the destruction of the first 'Âd with their city Irem of the Pillars), and on it depended for its irrigation a vast tract of country. Its remains are still visible, and have been visited by European travellers (C. de Perceval, Essai, i. p. 17). Luqmân and his family, after a rule which the Arabs say lasted a thousand years, was overthrown by Ya'rub, son of Qaḥṭân, who founded a new empire which afterwards became that of the Ḥimyerite kings. 'Abd-Shems Seba, father of Ḥimyer, made Mârib his capital, and repaired and completed the dyke. The bursting of the dyke is placed by C. de Perceval in 120 A. D., and the dispersion which followed it is proverbial in Arab history. To this event the dynasties of Ghassân and el-Ḥîreh owed their origin, and by reason of it the north and centre of Arabia became peopled by numerous tribes from el-Yemen, quite distinct from the race of Nizâr or Ma'add.

Luqmân is the king of the second 'Âd just mentioned. Et-Tuqûn is the plural of et-Tiqn, a name borne by two men in old Arab legend, 'Amr son of Tiqn, a famous archer in the days of Luqmân of 'Âd, and Ka'b son of Tiqn, mentioned by el-Meydânî. "A better archer than ibn-Tiqn" is given as an ancient proverb in the collection of the last named author (i. 278).

XIV.

قال مالك بن حريم الهمداني

أُنْبِيتُ وَالْأَيَّامُ ذَاتُ تَجَارِبٍ   وَتُبْدِي لَكَ الْأَيَّامُ مَا لَسْتَ تَعْلَمُ
بِأَنَّ ثَرَاءَ الْمَالِ يَنْفَعُ رَبَّهُ   وَيُثْنِي عَلَيْهِ الْحَمْدَ وَهُوَ مُذَمَّمُ
وَأَنَّ قَلِيلَ الْمَالِ لِلْمَرْءِ مُفْسِدٌ   يَحُزُّ كَمَا حَزَّ الْقَطِيعُ الْمُحَرَّمُ
يَرَى دَرَجَاتِ الْمَجْدِ لَا يَسْتَطِيعُهَا   وَيَقْعُدُ وَسْطَ الْقَوْمِ لَا يَتَكَلَّمُ

Mâlik son of Ḥarîm el-Hemdânî.

Yea, knowledge I have from Time, the best of all counsellors,
  the passing of days that brings to light wealth of hidden lore:
I know how the Rich is served by riches, how fair the praise
  they gather with cunning hands, whatso be the blame his due;

And how lacking wastes and wears a man though his heart be high
—yea, sharper the sting thereof than falling of untanned scourge!
He looks on the steps of Fame—the steps he can never tread—
and sits in the midst of men in silence without a word.

Ḥam. pp. 520-1.

NOTES.

Metre *Ṭawîl*, as in No. II. I have discovered nothing regarding the author or his date. The tribe of Hemdân, to which he belonged, was a branch of Meδḥij, a stock of el-Yemen.

XV.

قال آخر

أَقُولُ لِصَاحِبِي وَٱلْعِيسُ تَهْوِي   بِنَا بَيْنَ ٱلْمُنِيفَةِ فَٱلضِّمَارِ
تَمَتَّعْ مِنْ شَمِيمِ عَرَارِ نَجْدٍ   فَمَا بَعْدَ ٱلْعَشِيَّةِ مِنْ عَرَارِ
أَلَا يَا حَبَّذَا نَفَحَاتُ نَجْدٍ   وَرَيَّا رَوْضِهِ بَعْدَ ٱلْقِطَارِ
وَأَهْلُكَ إِذْ يَحُلُّ ٱلْحَيُّ نَجْدًا   وَأَنْتَ عَلَى زَمَانِكَ غَيْرُ زَارِ
٥ شُهُورٌ يَنْقَضِينَ وَمَا شَعَرْنَا   بِأَنْصَافٍ لَهُنَّ وَلَا سِرَارِ

One unnamed.

I said to my fellow while our beasts were speeding
with us from el-Munîfeh to eḍ-Ḍimâr—
'Drink deep the scent of the flowery Upland meadows,
'for after to-night no more shall we see '*Arâr.*'
How sweet the breezes that blow thence to us-ward,
when all its meads with rain besprinkled are!
How fair the days when there thy tribesmen halted,
and naught on thy spirit did that good time jar!
5 Months waxed and waned, and we in our heart's gladness
recked not if full-moon-tide were near or far.

Ḥam. p. 548.

NOTES.

The metre is *Wâfir*, as in No. III. The English only roughly imitates it, and does not attempt to keep up the equivalence of two short syllables or one long in the third place of each foot: the second hemistich of the English is also catalectic, the Arabic not.

v. 1. "Our beasts," "*el-'îs*": *'îs*, plural of *'eysâ*, means a she-camel almost white in colour, slightly tinged with yellow. This is one of the colours most esteemed in camels among the Arabs.

El-Munîfeh and eḍ-Ḍimâr are evidently stages on the road out of Nejd. The Marâṣid gives the former (iii, 167) as the name of a water belonging to Temîm towards Felj, where was fought one of their battles. The Qâmûs says it is a water of Temîm between Nejd and el-Yemâmeh. Eḍ-Ḍimâr in the Marâṣid (ii, 185) is likewise given as the name of a place between Nejd and el-Yemâmeh. This locality does not however suit very well here. El-Yemâmeh is as much part of Nejd as any other portion of that region; and a rider going from central to southern Nejd would hardly speak of himself as quitting the upland for the plain. El-Munîfeh means merely "the high place," and eḍ-Ḍimâr "the valley that hides, by enclosing him, the traveller therein" (or perhaps a hollow in the sand-sea rather than a valley); and both may be the names of many other places than those specified. I take it that the journey intended was rather towards the north than the south.

v. 2. *'Arâr* is the name (in the collective form) of a sweet-smelling yellow flower which in the spring season covers the uplands of Nejd. El-Khalîl says that it is *el-bahâret el-barriyyeh*, *Buphthalmum* or ox-eye. Others say that it is a bush (*Buphthalmum arborescens*), and Ibn-Barrî that it is the wild narcissus. The complexion of a woman is compared to the colour of its blossoms by el-'A'shà in the line

beyḍâ'u ḍaḥwatahâ waṣaf-
râ'u-l-'ashiyyeta ka-l-'arârah.

"White in the noonday, and clear yellow in the even like the *'arârah.*"

v. 5. More literally, "Months passed away, and we marked neither the full moons nor the new moons thereof."

Nejd, "the Upland," is the whole of that portion of Arabia which lies, on the south, west, and east, inland from the mountain barrier which separates it from the lowland by the coast (called Tihâmeh on the western shore): on the north the mountains of Ṭayyi' are included in, and form the limit on this side of Nejd. Though a great part of this area is desert during the rainless season, in the spring it is covered with verdure, and affords excellent pasture.

XVI.

قال آخر

تَمَتَّعْ بِهَا مَا سَاعَفَتْكَ وَلَا تَكُنْ   عَلَيْكَ شَجًا فِى الْحَلْقِ حِينَ تَبِينُ
وَإِنْ هِىَ أَعْطَتْكَ اللِّيَانَ فَإِنَّهَا   لِغَيْرِكَ مِنْ خُلَّانِهَا سَتَلِينُ
وَإِنْ حَلَفَتْ لَا يَنْقُضُ النَّأْىُ عَهْدَهَا   فَلَيْسَ لِمَخْضُوبِ الْبَنَانِ يَمِينُ

One unnamed.

Yea, take thy fill of joy with her what time she yields her love to thee,
and let no grieving stop thy breath whenas she turns herself to flee.
Ah, sweet and soft her ways with thee: bethink thee well: the day shall come
when some one favoured e'en as thou shall find her just as sweet and free.
And if she swear that absence ne'er shall break her pact of plighted troth,
— when did rose-tinted finger-tips and binding pledges e'er agree?

Ḥam. p. 575.

NOTES.

Metre *Ṭawîl*, third form, as in No X.

v. 1. "Grieving": *shejà* is properly a bone or anything else that sticks in the throat and chokes one.

v. 3. "Rose-tinted finger-tips," *makhḍûb-el-benân.* The Arab women tinge the ends of their fingers with *ḥinnâ (Lawsonia inermis).*

XVII.

قال توبة بن الحمير

لَوْ أَنَّ لَيْلَى الْأَخْيَلِيَّةَ سَلَّمَتْ   عَلَىَّ وَدُونِى تُرْبَةٌ وَصَفَائِحُ
لَسَلَّمْتُ تَسْلِيمَ الْبَشَاشَةِ أَوْ زَقَا   إِلَيْهَا صَدًى مِنْ جَانِبِ الْقَبْرِ صَائِحُ
وَأُغْبَطُ مِنْ لَيْلَى بِمَا لَا أَنَالُهُ   أَلَا كُلُّ مَا قَرَّتْ بِهِ الْعَيْنُ صَالِحُ

Taubeh son of el-Ḥômeyyir.

Ah if but Leylà once would send me a greeting down
  of grace, though between us lay the dust and the flags of stone,
My greeting of joy should spring in answer, or there should cry
  toward her an owl, ill bird that shrieks in the gloom of graves.
They envy me that from Leylà never was mine from her:
  how slight be the cause of joy soever, how good it is!

Ḥam. p. 576.

NOTES.

Metre *Ṭawîl*, as in No. II. The first line in both Arabic and English is *Makhrûm*, that is, deprived of its initial short syllable.

Much is told of this Taubeh in the Kitâb-el-Aghânî (x. 67—82). He was a cousin of Leylà, a woman of great beauty, belonging to the family of el-Akhyal (hence called Leyla-l-Akhyaliyyeh), of the tribe of 'Âmir son of Ṣa'ṣa'ah. Taubeh loved her from her childhood, when they were children in the desert together, but her father refused to give her to him in marriage. He led a stormy life, and met his death in fight in the reign of Mo'âwiyeh, the first of the Umawî Khalifehs. Leylà long survived him, but never forgot him and his love for her. She also was a renowned poetess, and was alive at a great age in the reign of 'Abd-el-Melik son of Merwân. A tale is told of her death in which these verses figure (Agh. x. 82). She was making a journey with her husband, when they passed by the grave of Taubeh. Leylà, who was travelling in a litter, cried "By God! I will not depart hence till I greet Taubeh." Her husband endeavoured to dissuade her, but she would not hearken: so at last he allowed her. And she went up the mound on which the tomb was, and said—"Peace be to thee, O Taubeh!" Then she turned her face to the people, and said—"I never knew him to speak falsely until this day." "What meanest thou?" said they: "was it not he," she answered, "who said—

'Ah, if but Leylà once would send me a greeting down
  of grace, though between us lay the dust and the flags of stone,
My greeting of joy should spring in answer, or there should cry
  toward her an owl, ill bird that shrieks in the gloom of graves'?

Nay, but I have greeted him, and he has not answered me as he said." Now there was a she-owl crouching in the gloom by the side of the grave; and when it saw the litter and the crowd of people, it was frightened, and flew in the face of the camel. And the camel was startled, and cast Leylà down headlong on the ground; and she died that hour, and was buried by the side of Taubeh.

v. 1. *Ṣafâiḥ* are the flags of stone set over a grave.

v. 2. The pagan Arabs had a strange and gloomy superstition, which survived long after the days of el-Islâm, though expressly denounced as baseless by the Prophet himself, that the spirits of dead men became owls, which dwelt in the graves where their bodies were laid. *Ṣadà* or *hâmeh*, the names for an owl, thus came to mean the ghost of a dead man; and a common proverbial saying in the mouth of an old man was "I shall be an owl to-day or to-morrow" (this was used even by so pious a Muslim as Lebîd in his old age under Mo'âwiyeh). Some say that only the souls of those slain unavenged became owls, and that they flew at night about the grave, crying *usqûnî, usqûnî*—"give me to drink!" When the blood of vengeance was poured forth, they were appeased and ceased to cry. That some such notion prevailed is clear from many passages, *i. e.*, that the owl or ghost was tormented by a perpetual thirst, which required to be assuaged with blood or wine (see No. XVIII in the present series): but it is equally certain that it was not only those who were slain unavenged who were believed to become owls, but that "owl" was the common word for all ghosts.

v. 3. *I. e.*, "they envy me Leylà's love: but I never obtained it. Nevertheless, that my name is coupled with hers is in itself a joy to me, and good, however slight a thing it be." *Kullumâ qarret bihi-l-'eyn*, literally: "everything which brings coolness to the eye." *Qurrat el-'eyn*, "coolness to the eye," is a common expression for gladness.

XVIII.

قال آخر

فَيَا رَبِّ إِنْ أَهْلِكْ وَلَمْ تُرْوِ هَامَتِي   بِلَيْلَى أَمُتْ لَا قَبْرَ أَعْطَشُ مِنْ قَبْرِي
وَإِنْ أَكُ عَنْ لَيْلَى سَلَوْتُ فَإِنَّمَا   تَسَلَّيْتُ عَنْ يَأْسٍ وَلَمْ أَسْلُ عَنْ صَبْرِ
وَإِنْ يَكُ عَنْ لَيْلَى غِنًى وَتَجَلُّدٌ   فَرُبَّ غِنَى نَفْسٍ قَرِيبٌ مِنَ الْفَقْرِ

Another, unknown.

O God, if I die, and Thou give not to mine owl to drink
of Leylà, I die, no grave lies thirstier than my grave!
And if I forget my pain though Leylà be not for me,
my Comforter is Despair: no comfort does Patience bring.
And if I suffice myself without her, seem strong and stern
—ah many the strength of soul that lies near to lacking sore!

Ḥam. pp. 541-2.

NOTES.

The first form of the *Ṭawîl*, as in No. VI.

One would gladly know the author of these passionate lines: but too many of the fragments in this Book of the Ḥamâseh (No. IV, "Love pieces,") are anonymous. It seems probable that he lived in the days of paganism, although, as just mentioned (Notes to No. XVII), the superstition to which reference is made in v. 1 was by no means extinct under el-Islâm. The translation is as nearly as possible word for word.

v. 1. See note to v. 2 of No. XVII. Here the poet, looking forward to his own death of love for Leylà, prays that his owl's thirst may be appeased by her blood.

v. 3. The play upon *ghinà*, "wealth," "strength," and *faqr*, "poverty, lacking," is difficult to render in English.

XIX.

قال ابو صخر الهذلى

أَمَا وَالَّذِي أَبْكَى وَأَضْحَكَ وَالَّذِي   أَمَاتَ وَأَحْيَا وَالَّذِي أَمْرُهُ الأَمْرُ
لَقَدْ تَرَكَتْنِي أَحْسُدُ الوَحْشَ أَنْ أَرَى   أَلِيفَيْــنِ مِنْهَا لَا يَرُوعُهُمَا الذُّعْرُ
فَيَا حُبَّهَا زِدْنِي جَوًى كُلَّ لَيْلَةٍ   وَيَا سَلْوَةَ الأَيَّــامِ مَوْعِدُكِ الحَشْرُ
عَجِبْتُ لِسَعْيِ الدَّهْرِ بَيْنِي وَبَيْنَهَا   فَلَمَّا انْقَضَى مَا بَيْنَنَا سَكَنَ الدَّهْرُ

Abû Ṣakhr el-Huđalî.

By Him who brings weeping and laughter,
  Who deals Death and Life as He wills—
She left me to envy the wild deer
  that graze twain and twain without fear!
O Love of her, heighten my heart's pain,
  and strengthen the pang every night!
O Comfort that days bring, forgetting—
  the Last of all days be thy tryst!
I marvelled how busy the World wrought
  to sunder us whiles we were one:
But when that which bound us was broken,
  then did the World rest, his work done.

Ham. p. 544.

NOTES.

Metre *Ṭawîl*, first form, as in No. VI.

Abû Ṣakhr of Huđeyl, the author, was a poet of the early days of el-Islâm, chiefly renowned as a writer of erotic poetry.

v. 1. The force which the repetition of *allađî* here gives to the original can hardly be adequately rendered in English. I have attempted to represent it by extreme concision, and thus, while the last two verses of the poem are rendered by four short lines each, the first two have only two lines apiece. The following is a literal translation of the latter:—

"Yea, by Him who brings weeping and laughter—by Him
who slays and brings to life—by Him whose command is the only power!
Verily she left me to envy the wild creatures of the field, when I see
a pair of them wandering together, with no fear to terrify them!"

v. 3. Here the translation is as nearly as possible literal. "The last of all days," *el-Ḥashr*, is the Day of the Resurrection.

v. 4. This verse is susceptible of two interpretations, depending on the various meanings of *ed-dahr* and *sa'à*. The former may either mean "the World," that is, the people of the World, the worldlings, or it may be rendered "Time"; and the latter may mean "to be busy, to work actively," or "to run." If the former interpretation be chosen, the rendering I have given above will express the sense—"I wondered how actively those unkindly ones about us worked to part us: but when they succeeded, then their activity ceased." If the latter, the meaning is—"I wondered how swiftly the time sped between me and her while we were united: but when the space of our union came to an end, then Time seemed to have ceased to move at all"; or, metrically—

"I marvelled how swiftly the time sped
between us the moment we met:
But when that brief moment was ended,
how wearily dragged he his feet!"

XX.

قال آخر

قَدْ كُنْتُ أَعْلُو الحُبَّ حِينًا فَلَمْ يَزَلْ بِيَ النَّقْضُ وَالإِبْرَامُ حَتَّى عَلَانِيَا
وَلَمْ أَرَ مِثْلَيْنَا خَلِيلَيْ جَنَابَةٍ أَشَدَّ عَلَى رَغْمِ العَدُوِّ تَصَافِيَا
خَلِيلَيْنِ لَا نَرْجُو لِقَاءً وَلَا تَرَى خَلِيلَيْنِ إِلَّا يَرْجُوَانِ التَّلَاقِيَا

One unnamed.

Love's master was I once and free: but evermore his strength be bent
to bind me fast, and I to loose, till in the end he mastered me.
And never saw I like us twain two lovers sundered, she from me,
and I from her, true-hearted still and faithful, spite of all men's hate
— Two friends that have no hope of converse, meeting never face to face:
where hast thou seen two loving hearts that looked not for the day of joy?

Ḥam. p. 551.

NOTES.

Metre *Ṭawîl*, second form, as in No. II.

The first line of this poem is not rendered by Rückert in his version of the Ḥamâseh, as being impossible to express fully in German. The difficulty lies in the words *en-naqḍ* and *el-'ibrâm*, the former of which means the untwisting of the strands of a rope, and the latter the twisting of them tight. The verse therefore means—"Love strove with me to twist tight my bonds, while I strove with him to untwist and relax them. I was his master at the beginning, but in the end he prevailed over me."

v. 3. *I. e.* "We are lovers who have no hope of delight one in the other: and hardly shalt thou see two lovers who look not some day to be joined together. Yet we are firm and faithful in our love, though we have no hope."

XXI.

قال بكر بن النطاح

بَيْضَاءُ تَسْحَبُ مِنْ قِيَامٍ فَرْعَهَا وَتَغِيبُ فِيهِ وَهْوَ وَحْفٌ أَسْحَمُ
فَكَأَنَّهَا فِيهِ نَهَارٌ سَاطِعٌ وَكَأَنَّهُ لَيْلٌ عَلَيْهَا مُظْلِمُ

Bekr son of en-Naṭṭâḥ.

A white one: she rises slow, and sweeps with her hair the ground:
it hides her within its coils, a billow of blackest black.
She shines in its midst like Dawn that breaks from the farthest East:
it bends like the darkest Night and veils her above, around.

Ḥam. p. 566.

NOTES.

The metre is the *Kâmil,* as in No. IX. The English, however, follows the *Ṭawîl,* of the second form.

Bekr son of en-Naṭṭâḥ was a man of Ḥanîfeh, and a native of el-Yemâmeh. For some time he robbed on the highway, but was induced by Abû Dulaf, a minister of the 'Abbâsî Khalîfehs, to enter the army, where he shewed great valour. He was thus a late poet, and when he died, says Abû Hiffân, poesy came to an end for ever. Abû Dulaf, his patron, died in A. H. 226.

XXII.

قال نصيب

كَأَنَّ ٱلْقَلْبَ لَيْلَةَ قِيلَ يُغْدَى   بِلَيْلَى ٱلْعَامِرِيَّةِ أَوْ يُرَاحُ
قَطَاةٌ عَزَّهَا شَرَكٌ فَبَاتَتْ   تُجَاذِبُهُ وَقَدْ عَلِقَ ٱلْجَنَاحُ
لَهَا فَرْخَانِ قَدْ تُرِكَا بِوَكْرٍ   فَعُشُّهُمَا تُصَفِّقُهُ ٱلرِّيَاحُ
إِذَا سَمِعَا هُبُوبَ ٱلرِّيحِ نَصَّا   وَقَدْ أَوْدَى بِهَا ٱلْقَدَرُ ٱلْمُتَاحُ
٥ فَلَا فِى ٱللَّيْلِ نَالَتْ مَا تُرَجِّى   وَلَا فِى ٱلصُّبْحِ كَانَ لَهَا بَرَاحُ

Nuṣeyb.

They said last night—'To-morrow at first of dawning
or may be at eventide Leylà must go.'
My heart at the word lay helpless, as lies a Qaṭà
in net night-long, and struggles with fast-bound wing.
Two nestlings she left alone in a nest far distant,
a nest which the winds smite, tossing it to and fro.
They hear but the whistling wind, and stretch necks to greet her:
but she they await—the end of her days is come!
So lies she, and neither gains in the night her longing,
nor brings her the morning any release from pain.

Ḥam. pp. 577-8.

NOTES.

Metre *Wâfir*, as in No. III. The English follows the original measure, save in making the second hemistich catalectic.

Nuṣeyb was a negro slave, the property of a man who lived in Wâdi-l-Qurà, not far to the East of el-Medîneh. He covenanted with his master to buy his freedom (in Freytag's text, for *kânet 'alà nefsihi*, read *kâtaba 'alà nefsihi*), and having done so, repaired to the Khalîfeh 'Abd-el-'Azîz ibn Merwân, whom he praised in an ode. In requital therefor 'Abd-el-'Azîz gave him the purchase money wherewith to redeem himself, and gifts besides. He excelled in erotic and laudatory poetry.

v. 2. "A Qaṭà." The Qaṭà is the sand-grouse, a well-known bird of the Arabian Deserts, constantly recurring in old Arab poetry, and the subject of innumerable proverbial sayings.

The revenues of the Mughal Empire in India.—By EDWARD THOMAS, F. R. S., *Late Bengal C. S.*

Indian Numismatists are greatly indebted to Mr. C. J. Rodgers of Amritsar for his contributions of coins "supplementary to the Chronicles of the Pathán Kings of Dehli,"[*] and for the careful illustration of the new specimens, by his own hand, which have lately appeared in our Journal.

In his last paper in Part I, Vol. XLIX, 1880, p. 213, on the "Copper coins of Akbar," Mr. Rodgers has entered into some speculations on the amount of the State Revenue of that monarch, based upon novel interpretations of the legends on the coins he describes, which seem to me to be open to criticism. I am the more bound to notice these readings and the deductions involved, as they touch a subject of much importance in the Fiscal history of India, which I have endeavoured to elucidate in a separate publication on the "Revenue resources of the Mughal Empire."[†]

I cannot claim that this work was received with much favour, on its first appearance, the returns contrasted so strikingly with the lesser totals obtained from the land in our day, that there was an intuitive tendency to suspect errors in my figures and calculations.[‡] However, as Mr. W. W.

---

[*] Trübner, London, 1871, 8vo., pp. xxiv. 467.

[†] Trübner, London, 1871, 8vo., pp. 54.

[‡] Sir H. Elliot, one of our most experienced Settlement Officers under Martin Bird, in his investigation into the revenues past and recent of the province of Sind, was equally startled to find how little the British Government obtained from that fertile land, in comparison with the income of their Native predecessors. He remarks (p. 473, Vol. I, Dowson's Edit. Historians of India) "Under the Tálpúrs * * Sind is said to have occasionally yielded £400,000; and under the Kalhoras, tradition represents the revenue at the exaggerated amount of £800,000. At present (A. D. 1855), with security on all its borders, and tranquililty within them, it does not pay to the British Government more than £300,000, and the expenses have hitherto been double that sum."

Hunter remarked in 1872.[*] "Several attempts have been made in India to controvert Mr. Thomas's figures, but so far without success." And in his latest Lectures on "England's work in India,"[†] the "Director-General of Statistics to the Government of India," embodies them without question in his text, as a basis of comparison with the existing revenues of British India, and adds "indeed, the difficulty of a comparison has arisen not from the absence of information in respect to the Mughal revenues, but for want of exact statements regarding our own."

Mr. Clements Markham, to whom H. M.'s Indian Government entrusted the task of compiling the successive Reports on the Indian Surveys, in like manner, seems to have fully satisfied himself as to the soundness of my data, which he quotes, in all faith, in his special notice of Akbar's fiscal policy.[‡]

On the other hand, there have been criticisms and contentions enough, none of which seem to me to go so thoroughly into the details of a complicated subject, as to require more than a passing notice.[§]

I reproduce the general summary of the results obtained by me in 1871, from various and completely independent sources.

I have no wish whatever to claim for them finality, but they fall in epochally with probabilities, and I shall be the first to welcome any new lights, by whomsoever discovered.

---

[*] Orissa. Smith, Elder and Co., 1872, Vol. II, p. 275.

[†] Smith, Elder, 1880, p. 104.

[‡] Akbar, an Eastern Romance * * with notes and an introductory life of the Emperor Akbar by C. R. Markham, C. B., F. R. S. W. H. Allen and Co., 1879, pp. xxvi, xxxiii, and 106.

[§] I scarcely know how to reply within reasonable space to Mr. H. G. Keene's criticisms in his "Turks in India" (Allen, 1879), they are so discursive; but, the main point of difference between us seems to be the relative reliance to be placed on the returns of the Aín-i-Akbarí, as against those of Nizám-ud-dín Ahmad. The former were avowedly progressive as new official details came in, and the grand total (in the case I examined) did not accord-with, or come-up-to the divisional totals embodied in the same schedule; the method of reckoning was also, to a certain extent, arbitrary, *i. e.*, by 40 *dáms* to the *rupee*, the latter a coin only recently introduced, and whose absolute divisional money representative, or $\frac{1}{40}$th *in copper*, is still a doubtful quantity. I may add, with reference to the *dám* of account, that Prof. Wilson in his Glossary of Indian terms, informs us that, the 40 *dáms* to the Rupee of Akbar's time, came to be 46⅔rd under 'Alamgír and even 80 to 90, at later periods. Whereas, on the other hand, Nizám-ud-dín, a master of finance, defined his returns in Sikandari *Tankas*, the current coin in which the Settlement of Sikandar Lodi had been framed. Mr. Keene, at p. ix, takes objection to my estimating the *rupee* at 2 shillings, this was merely done for facility of conversion, but every available testimony goes to prove that the exchange value of the fine silver *rupee* was, in those days, far higher than 2/.

RECAPITULATION OF THE AMOUNT OF THE REVENUES OF THE MUGHAL EMPIRE AT VARIOUS PERIODS, WITH THE AUTHORITIES FOR THE RETURNS.

MUGHAL EMPERORS.	AUTHORITY.	Land Revenue.	Revenue from all sources.
1. Akbar, A.D. 1593 ..	Nizám-ud-dín Ahmad ..		£ 32,000,000
2. " A.D. 1594 ..	Abúl Fazl, MSS.	£ 16,574,388	
3. " " ..	Official documents	16,582,440	
4. " A.D. 1605 ..	Indian authorities quoted by De Laët	17,450,000	
5. Jahángír, A.D. 1609-11	Captain W. Hawkins ..		50,000,000
6. " A.D. 1628 ..	Abd ul Hamíd Láhóri ..	17,500,000	
7. Sháh Jahán, A.D. 1648-9	Ditto	22,000,000	
8. Aurangzéb, A.D. 1655	Official documents { Gross, Nett,	26,743 970 24,056,114	
9. "	Later official documents* ...... { Gross, Nett,	35,641,431 34,505,890	
10. " A.D. 1695	Gemelli Careri		80,000,000
11. " A D. 1697	Mannucci (Catron)	38,719,400 (× 2 =)	77,438,800
12. " A.D. 1707	Ramusio	30,179,692	

Mr. Rodgers proposes to reduce by a summary process my total No. 1, of Nizám-ud-dín, from £32,000,000 to £3,200,000. The data for this alteration are, unfortunately for his argument, fundamentally erroneous. He has figured two coins of Akbar, in his Plates, bearing upon this division of his proofs.

No. 27 weighing 40 grains of copper, which he reads correctly as دمری (one) *damrí.* A second coin of a similar character No. 4, weighing 76 grains of copper, he reads incorrectly as دام *dám*, and he proposes to identify the coin as the representative of *the* dám or $\frac{1}{40}$th of the rupee of Akbar's revenue system.

I need scarcely follow his method of calculation whereby he seeks to justify the reduction above-named, as there is a much more simple way of disposing of the question. Tested by his own interpretation of the legend on No. 27, the letters on No. 4 can only be read as دمرا *damrá*,† *i. e.*, a double *damri*,‡ and have nothing whatever to do with the long-sought piece of the money of account.

His second basis of calculation depends on the import of the word he transcribes as *tánke*, inscribed on his coins Nos. 1, 2, 3. The definitions of value on these pieces result in an average weight, in copper, of something over 55 grains. Mr. Rodgers thereupon proceeds to infer that as "the total revenues of Akbar are put down by Nizám-ud-dín at 640,00,00,000 tánkes. This at the rate of 200 to the rupee would be equal to 3,20,00,000 rupees or £3,200,000."

---

* 5 per cent., allowed for collection.

† The *final* م *mim*, on the Mughal coins is marked in its down stroke. This supposed م has a subjunct *e*.

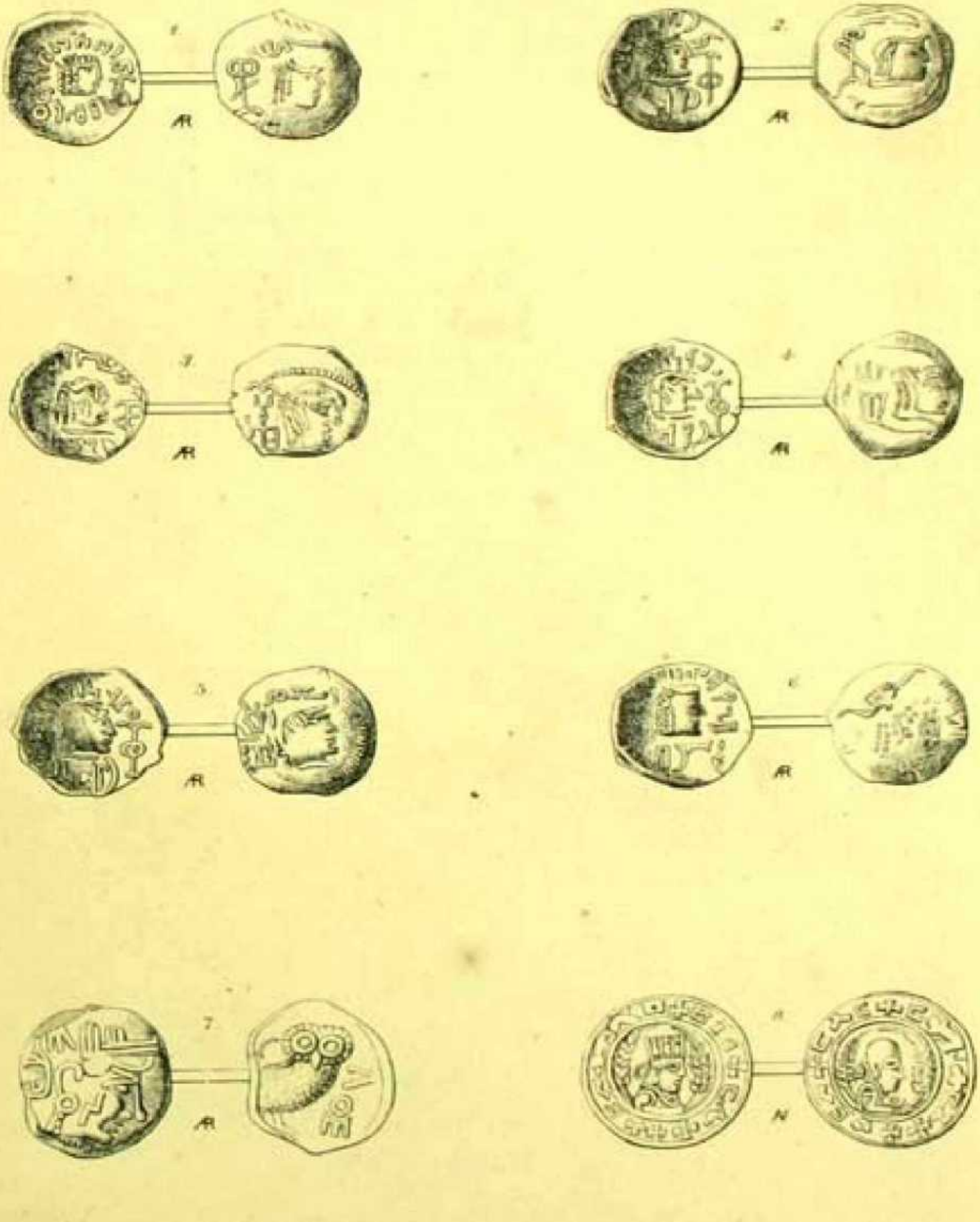
‡ دمڑی damṛi from द्रम्म *dramma*, $\frac{1}{8}$ of a paisa,—دمڑا damṛá gold, silver, riches. द्रम्म *dramma*, Gr. δραχμή.

In this instance, also, the argument is founded on a palpable fallacy. There were both gold and silver تنكه *tankahs*[*] which constituted the early currency of the Patháns, each of which were of the identical weight of 175 grains. But the *Tánk* (or *dáng*), as I was careful to point out (p. 408, my Pathán Kings), had nothing to do with the *Tankah*. I was also able to determine that the former was the surviving equivalent of the *Puráṇa* of Manu, weighing 32 *Ratis* or 56 grains; in short the دانگ (Arabic دانق) *dáng*, which Bábar himself remarked, was still used, in his days, to weigh "jewels and precious stones," and which he enters in his own Table of weights as equivalent to 32 *Ratis*.[†]

---

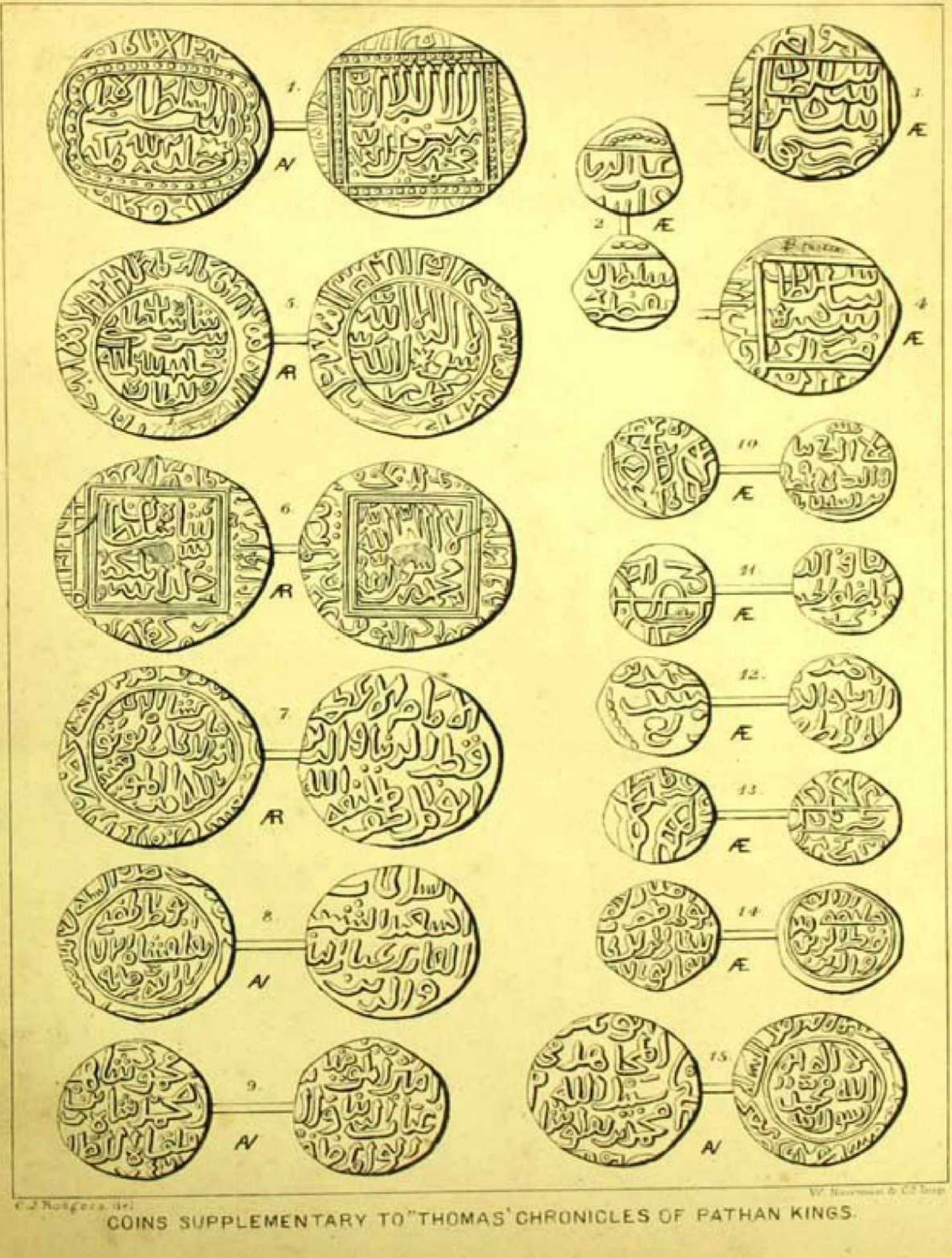
[*] The Persian Historians designate the coins in these two metals as *Tankahs*. The word on the gold pieces is سكه *Sikkah* in its generic sense.

[†] Leyden's Memoirs of Bábar, p. 332, My Patháns, p. 222.



Drawn, Lith: & Printed by W. Newman & Co Calcutta

PRIDEAUX: ON THE COINS OF CHARIBAEL.



C. J. Rodgers del.

W. Newman & Co. lith.

COINS SUPPLEMENTARY TO "THOMAS' CHRONICLES OF PATHAN KINGS.

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

◆

Part I.—HISTORY, LITERATURE, &c.

Nos. III & IV.—1881.

Relics from Ancient Persia in Gold, Silver, and Copper.—By Major General A. Cunningham, C. S. I., C. I. E., *Director General Archæological Survey.*

(With nine Plates.)

In the year 1877, on the north bank of the Oxus, near the town of Takht-i-Kuwât, opposite Khulm and two days' journey from Kunduz, there was found a large treasure of gold and silver figures, ornaments and coins, most of which have been brought to India for sale. The site is also called Kawat and Kawadian, and I have no doubt that it is the Kobadian. The finders quarrelled about the division of the spoil, and several of the larger objects were cut to pieces for the sake of a ready settlement of accounts on the spot. Two of the most interesting objects, a horseman and a chariot, both of gold, were presented to Lord Lytton by Sir Louis Cavagnari. Most, if not all, of the remaining objects of the first find have come into my possession. The coins have been scattered. Several have gone to the British Museum, and many have passed into the hands of various collectors; but a large number have come to Mr. A. Grant and myself. I believe that I have *seen* most of them, as both dealers and owners have sent to me either the coins themselves or impressions of them for identification. The coins, so far as I have seen of them, range over a period of about three hundred years, from the time of Darius to that of Antiochus the Great and Euthydemus of Bactria. The gold and silver figures seem also to belong to different ages, as some are decidedly very archaic; more particularly the small statuette of a king in silver, which I think may be as old as the time of Darius.

It is perhaps rather bold to speculate as to how this large treasure came to be hidden. It was not found all in one spot; but scattered about in the sands of the river. One may therefore conjecture that it may have been concealed in the bank either in wooden boxes, or in vessels of earthenware, which fell to pieces when the swollen stream cut away the bank and scattered their contents over the sands.

If I am right as to the age of the latest coins, the treasure must have been buried about the time of Antiochus the Great and his contemporary Euthydemus of Bactria, as not even a single specimen of either Demetrius or Eukratides has yet turned up. Now we know that Bactria was invaded by Antiochus in B. C. 208. Euthydemus took up a position near Tagouria with an advanced post on the River Arius defended by ten thousand cavalry. In the battle which followed, Euthydemus was defeated, and being disheartened he "retreated to Zariaspa, a city of Bactriana, with all his army." I quote the following from my account of this campaign in the Numismatic Chronicle.

"In marching from Hyrkania to Bactria, Antiochus must have followed the high road along the valley of Meshed to the fort of Muzdarân, which stands on an isolated spur of table-land at the entrance of the Darband Pass.* This is the place which I suppose that Antiochus was besieging when he heard that Euthydemus was encamped at Tagouria, only three days' march distant, and that a body of cavalry was prepared to dispute the passage of the Arius River. Antiochus at once raised the siege, and resolved to cross the river, and advance against the enemy. For the first two days he moved slowly, but on the evening of the third day, leaving the main body behind, he made a forced march with all his cavalry and light-armed troops. As the country was level, and easy for the march of cavalry, he reached the banks of the River Arius and crossed it before dawn. Now the road through the Darband Pass leads direct upon the town of Sarakhs, which lies to the east of the Tejend, or Arius River, at forty-five miles distance from Muzdarân. The nature of this road also corresponds exactly with the account of Polybius; as Burnes describes the route for the eighteen miles to the south-west of Sarakhs, as lying "over a level country, broken in some places by gravelly hillocks."† Sarakhs itself must therefore be the city to which the Bactrian cavalry retired at night; and Tagouria, where Euthydemus was encamped, may be looked for somewhere along the line of the Murghâb, or Margus River, in the neighbourhood of Maru-ur-Rûd, or Alexandria Margiane."

"Wilson thinks that Euthydemus showed little courage or conduct‡ in retiring at once so far back as Balkh, and he therefore infers that Zariaspa should rather be in the situation of Maru and Andkoh. But the identification of Zariaspa with Bactria or Balkh seems to me to be too well established by the direct testimony of Ptolemy, as well as by the coincidence of its name with Azergashasp or Azerasp, the famous fire-temple of Balkh, to be set aside by any reasoning founded on mere opinion. I disagree also with Wilson in thinking that Euthydemus would have shown good judgment in retiring upon Maru; for Maru stands on the edge of the desert, so that his further retreat would have been cut off, and he would have been compelled either to fight or to submit, and in such a position a defeat would have been fatal. By retiring upon Balkh there were two lines of retreat open to him; either northward into the mountains of Sogdiana, or eastward up the valley of the Oxus. By taking up this commanding position in front of his capital, Euthydemus forced his antagonist to come to terms."

---

* Burnes' Travels, iii, 59.

† Burnes' Travels, iii, 58.

‡ Ariana Antiqua, p. 221, note.

Zariaspa has been generally accepted as only another name for the old capital of Balkh, which was derived from its famous fire-temple of Azergashasp, or Azer-i-asp. I conclude that the treasure may have been hidden shortly before the defeat of Euthydemus, by some one who went to join the army on the Arius River and did not return to recover it. And there it has lain on the bank of the Oxus for upwards of two thousand years, whilst Parthians and Scythians, Sassanians and Arabs, Turks and Mughals have in turn swept over the country and crossed the river within a few miles of the hidden treasure.

I have arranged the principal objects of this curious discovery in six Plates according to their subjects, followed by two Plates of coins, and a single Plate of bronze objects from Sistân, or Drangiâna, which also formed a part of the Ancient Persian empire of the Achæmenidæ. Before discussing the varieties of dress and arms and ornaments brought to light in these curious relics, I think it best to give a brief description of the objects represented in the different Plates.

Plate XI. *Royal Statuette.* Solid silver, full size, weight 5,794 grains. In my own possession. The figure is represented in two views, both front and back. The upper part of the dress is bordered with broad bands of gold ornament let into the silver, with a similar gold band down the front of the long tunic. The diadem is fastened near the top of the head dress or tiara, with its broad ends hanging conspicuously at the back of the head.

Plate XII. *Royal Figures.* Thin gold, full size, weight 84 grains. Author.

No. 1. Standing figure with crown on head, right hand up-raised and left hand carrying a flower. Author.

No. 2. Gold Ring, weighing 272 grains. Author. Crowned figure of king seated on a chair—holding a bird on his right hand and a flower in his left.

No. 3. Double Daric, gold. Author. The type is the same as that which is so well known on the single Darics. The king, crowned and resting on his right, knee carries a bow in his outstretched left hand, and an arrow in his right.

No. 4. Silver coin. Author. This rare coin is of the same type as the gold Darics and silver Darics, but its weight is only two-thirds of that of the silver Daric or *Siglos*. This proves that the silver *Siglos* was divided into six parts, which as I will hereafter show were called *danaké*, in Greek δανάκη.

No. 5. Silver coin. Author. The king crowned and kneeling as on the coin just described. In his left hand the usual bow, and in his right a long spear, with a heavy knob at the end. In the field the Greek letters Δ H.

No. 6. Large silver coin, weighing 407¼ grains. Author. Archaic type; crowned king in chariot drawn by four horses.

No. 7. Large silver coin weighing 400 grains. Author. Similar types.

I have seen four specimens of the former, and six of the latter type, brought from the Oxus find. These coins are usually named Persian octodrachms, but I believe that they should rather be called Pentasiglons, or Quarter Darics, as I will show hereafter. I have placed them here for the purpose of illustrating the following figure.

No. 8. Gold; full size; king and driver in chariot. Weight 368 grains. Lord Lytton. Horse gold, 96 grains. Author.

In the plate the wheel has been added from that shown on the large silver coins. The driver in spite of his shortness is standing, while the tall king is sitting, with a spear in his hand, on a seat running from front to rear, and not across the chariot. The reins of thin gold wire still cling to the driver's hands, while a similar gold wire forms the head-gear of the horse. The figures are all hollow, having been formed in two pieces, and afterwards joined rather roughly.

I understand that a much larger chariot with wheels and horses complete, including also a king and a charioteer, was found last year and sent to England, where it was sold for a large sum. I was not allowed even to see it.

Plate XIII. *Statuettes.*

No. 1, front view, and No. 2, side view, of a gold figure, full size, weighing 1063 grains. Lord Lytton. The figure is nearly solid, and must have been originally mounted on horseback, as shown by the position of the legs and hands. I take it to be a royal personage partly from the embroidered tunic, and partly from the tall head-dress, which was peculiar to the kings of Persia.

No. 3, solid silver statuette, half size, weighing 28,282 grains, or nearly 59 ounces. Author. The figure is naked, with the exception of the head which is covered with a tall flat-sided cap, very like that of the rider shown in No. 1, but without the flaps.

No. 4, head of a horse nearly solid, in gold, full size, weighing 673 grains. Author. This statuette was entire when found; but the finders having quarrelled about the division of their treasure, the horse was cut in pieces with a chisel, some marks of which may be seen both on the neck and the cheek. It is said to have been nearly 6 inches long.

Nos. 5 and 6. Side and front views of the head dress of the last Râjâ of Ladâk, to illustrate the tall cap of the naked silver figure. The upper part of the cap was of black velvet, rimmed with a band of sky blue silk, embroidered with gold.

Plate XIV. *A Magus or Priest.*

Gold Plaque, full size, weighing 624 grains. Author. The figure will be described presently.

Plate XV. *Animals.*

No. 1. Winged bull, full size, weighing 134 grains. Author. At the back of the Plate there are several small eyelet holes for securing it to some back ground.

No. 2. Small eagle, full size, in solid gold, weighing 13 grains. Author.

No. 3. Small pigeon, full size, in hollow gold, weighing 24 grains. Author. This figure has small eyelet holes below.

No. 4. Small square gold plaque, full size, weighing 26 grains. Author. Figures of man and lion in archaic style.

No. 5. Gold ring, weighing 60 grains. Horse running to left. Author.

No. 6. Gold stag, full size, weighing 385 grains. Author. The stag had branching antlers, of which one is altogether gone, and the other broken off just above the lowermost tire. From some marks about the feet it would appear to have been fastened to a flat plate, like the sheep in the next figure.

No. 7. Gold sheep, full size, weighing 924 grains. Author. The figure is fixed to an oblong plate which is pierced with small holes all round the four sides for the purpose of securing it firmly, either by rivets to the crest of a metal helmet, or by sewing it to the top of a felt head-dress. Or, perhaps both the stag and the sheep may have been the crowning figures of military or royal standards.

No. 8. Gold fish, half size, weighing 5,687 grains or nearly 12 ounces. Author. This figure is 9¼ inches in length, and was most probably the crest of a royal standard, as the *Mâhi Marâtib* or "Fish standard" has come down even to our own times as one of the symbols of high position, if not of royal rank. Thus the king of Oudh had two fishes carved on the gateways of his palace, and also placed a fish on his coins. One of the privileges said to have been granted by Kutb-uddin, the first Muhammadan king, to the Hindu Princes was the right of hoisting the royal fish standard or *Mâhi Marâtib-kino*, as it is expressed in the books of Mukji the famous bard of the Khîchî Chauhâns.

Plate XVI. *Ornaments.*

No. 1. Earring of solid gold, full size, 48 grains. Author. The pin which passed from the back of the head to the feet has been lost. The execution of this little figure is much superior in finish to most of the other objects.

No. 2. Large finger ring in shape of a coiled snake, 176 grains. Author.

No. 3. Small finger ring of similar design, 77 grains. Author. Both of these rings are of pale gold.

No. 4. Gold belt clasp, full size, weighing 486 grains. Author. There are two flat loops at the back for the belt to pass through. The youthful male head, crowned with a chaplet of ivy leaves, stands out in very bold relief. It differs, however, in its workmanship from most of the other objects, having been beaten up from behind, instead of being cast in a mould. It is therefore a very ancient specimen of repousèe work. I take the head to be that of *Dionysos Kissophoros*, or the "Ivy-crowned Dionysus," and that it must have been the work of some Oriental Greek about the time of Alexander the Great.

Bracelets.

All the specimens that I have seen were cut up by the finders, the plain middle pieces being consigned at once to the melting-pot, and only the ornamented ones kept for sale. The specimens in the Plate are all from my own collection.

No. 5. Gold bracelet, full size, ending in ram's head.

No. 6. ditto, full size, ending in dog's head (?)

No. 7. Spiral gold bracelet, full size, ending in lion's head. Some portions of the spiral coil being left attached to each end, I had the bracelet completed by a Simla goldsmith.

No. 8. Gold bracelet, full size, ending in lion's head.

No. 9. Gold bracelet, full size, ending in wild goat's head. The top view of the head is also shown, where it will be seen that the tips of the horns are made to join so as not to offer any points for catching in the dress.

No. 10. Gold bracelet, full size, ending in head of horned lion (?) The top view of this bracelet is also given.

Torques or Collars.

No. 11. Two bull's heads in gold set upright, full size.

No. 12. Lion's head in solid gold, full size, weighing 336 grains. All my enquiries have failed to discover the companion piece. When complete this collar must have weighed about seven ounces. I understand that it was cut into several small pieces.

Dress of the Ancient Persians.

The king was distinguished from all his subjects by wearing an upright head dress, called *Kidaris* or *Kitaris*, an oriental name which still survives in the Hebrew *Kether*. Curtius says "Cidarim Persæ regium capitis vocabant insigne." Plutarch also relates that Artaxerxes allowed his eldest son Darius, when he declared him his successor, to wear "the point of his *Kitaris* erect, as a mark of royalty." It was bound with a fillet called *Mitra*, which like the Greek *diadêma*, had the two ends hanging down behind the head. The Greek word itself was also introduced into Persia, most probably during the time of the Seleukidæ, and it still exists in Persian under the contracted form of *dehîm*, by the simple elision of the second *d*. All head dresses were called by the general name of *tiâra*, that of the king being distinguished by its upright form. Another term was *Kurbasia*, which would rather seem to be a foreign name, if, as I suppose, it contains the Tûrki word *bâsh*, or "head," the whole word meaning perhaps only "head covering."

A specimen of the upright tiâra, with the diadem is seen in the silver statuette in Plate XI. The same tiâra is apparently represented on the most ancient Persian coins, both of gold and silver, as seen on the different specimens in Plate II. But the head dress on the coins is almost invariably represented with a radiated crown on the top, which in figure 1 of Plate XII would seem almost to be separate from the tiâra, or head-dress proper. But perhaps the finest specimens of the *Kidaris*, or upright tiara, are seen on the larger silver coins of Tigranes king of Armenia, on which the tiara is formed with a radiated upper edge. The *Kidaris* itself was made of crimson cloth, with a diadem of sky blue spotted with a white star. So Curtius says "Cærulea fascia albo distincta circumibat." So also the tall cap mentioned above as worn by the Râjâ of Ladâk has a sky-blue border.

The common *tiâra* was a soft felt cap, called *pilos* by the Greeks; but it differed from the Greek *pilos* in having long lappets which could be tied under the chin.* This is the cap worn by the drivers in the chariots in Plate XII; by the Satrap Tiridames on No. 5 coin of Plate XVII; by the Magus in Plate XIV, and apparently also by the king himself when out riding or hunting, as shown in Plate XIII. But the caps worn by the Magus and the king are tall, the former only differing from the royal cap in the upper part being pressed downwards and backwards. The Satrap head-dress with its side lappets is fully displayed on the beautiful coin of Pharnabazus published by the Duc de Luynes.*

---

* This fact is specially referred to by Juvenal, VI, 516.

The outer dress consisted of a sleeved tunic, a pair of light fitting trowsers, and boots.

The tunic worn by all classes of Persians was a sleeved coat called *Kandus* or *Kanduké*, a name which appears to contain the Persian word *Kum*, or *Kam*, "a sleeve." It was also called *Sarâpis*, which may perhaps be only the Persian word *Sarâpâ* "from head to foot," and if so, this term would rather apply to the Median robe, which reached down to the ground, than to the later Persian tunic. According to some the *sarâpis* was a striped tunic of crimson and white, *purpureæ tunicæ medium album intextum.*† But judging from the coloured dress of Darius in the Pompeian Mosaic, and from the dress of the golden statuette horseman in Lord Lytton's possession, the main part of the tunic was of scarlet, with a broad band of white down the front, and narrow bands along the edges of the sleeves and of the skirts.

The Persian trowsers were of two kinds, "loose" and "tight." The former were called *sarabâra* or *saraballa*, a name which is still in use as *sarẃil* and *sarawâl* for the very same garment. The light trowsers were called *anaxurides*, in the plural. Xenophon calls them ποικίλαι ἀναξίρυδες which may mean either "embroidered" or "parti-coloured." The tight-fitting trowsers or *anaxurides* are worn by Darius and most of the Persian chiefs, in the famous Pompeian mosaic representing the battle of Issus. They are also worn by the horseman in Plate XIII and by the seated Satrap Datames or Tiridames on the coin No. 5 of Plate XVII. I can find nothing about either their material or their colour, as I have not access to any coloured copy of the Pompeian mosaic.

The boots were of soft leather, and sometimes ended in long points, as seen in the gold statuette of Plate XII. But these long points were most probably confined to riding boots, as the king in Plate XI has square-toed boots, much like those of the present day, excepting only that they are highly ornamented.

Magus or Priest.

In Plate XIV we have a representation of the Magus or Priest as he stood in front of the fire altar for daily worship. The most minute account of the ancient Magi that has come down to us is that of Strabo, who had no doubt frequently witnessed the Magian worship. "The Persians" he says "have also certain large shrines, called *Pyrætheia.* In the middle of these is an altar, on which is a great quantity of ashes where the Magi maintain an unextinguished fire. They enter daily and continue their incantation for nearly an hour holding before the fire a bundle of rods, and wear round their heads high turbans of felt, reaching down on each side, so as to cover the lips and the sides of the cheeks." Here I think there must have been some mistake of the copyist, as Herodotus mentions that when all was ready, the Magus "chanted a hymn," which he could hardly do when his mouth was covered with the lappets of his head-dress.[*] The figure in Plate XIV certainly has his lips quite free. I think therefore that we might venture to change τὰ χείλεα the "lips" to τράχηλον the "throat." Strabo's description would then tally exactly with the representation of the Magus on the gold plate, having both his *throat* and the sides of his cheeks covered by the lappets of his head-dress. The dress of the Magus was white according to Diogenes Laertius,[†] but nothing is said about its ornamentation, which is conspicuous in the Plate, both on the shoulders and round the edges of the tunic, which reaches only to the knees. He has a short sword on his right side, and holds the *barsom*, or "holy wand of twigs," in his right hand before him.

---

* Essai sur la Numismatique des Satrapies et de la Phenicie sous les Rois Achæmenides. Plate I, fig. 5.

† Curtius, Vit. Alexand. III. 3-7. The *medium intextum* agrees with the μεσόλευκοι of the Greek writers. See also Xenoph., Cyrop. I. 3,2.

Strabo describes the sacrifices of the Magi in another place, where he says that "they continue their incantations for a long time, holding in their hands a bundle of slender myrtle rods." But in neither place does he mention in which hand the Magus held the barsom, or wand of twigs. This omission is very unfortunate, as the Parsi priests of the present day hold the sacred wand in the left hand, in utter disagreement with the ancient custom as represented on the gold plate. At first I thought it possible that the artist might have made a blunder in placing both the barsom and the sword on the right. But I see that the Persian soldiers given in Rawlinson's ancient monarchies wear exactly the same short swords on the right side.[‡] It is clear therefore that the present practice of the Parsis is an actual departure from the custom of the Magi of old.

In *Yasna* 57, as published by Haug, I find the following passage regarding the *barsom*, or holy wand of twigs.[§] "He who first arranged the bundle of sacred twigs *(barsom)*, that with 3, that with 5, that with 7, and that with 9 stalks, those which were so long as to go up to the knees, and those which went as far as the middle of the breast, (he arranged them) to worship, to praise, to satisfy and to extol the archangels."

---

[*] Herodot. I. 132. Curtius also speaks of the Magi singing, III. 3.7.

[†] 'Εσθῆς μὲν λευκή quoted by Rawlinson, Anct. Monarchies, Vol. II, 347-2nd edition.

[‡] Ancient Monarchies, 2nd edition, Vol. III, pp. 172-174, 176.

[§] Haug's Essays, by West, p. 189.

In his notes descriptive of Parsi ceremonies Haug gives the following detailed description of the holy wand. "The barsom consists of a number of slender rods or *tâî*, formerly twigs of some particular trees, but now thin metal wires are generally used. The number of these *tâî* depends upon the nature of the ceremony to be celebrated. For Ijashne *(yazishn)* alone 21 *tâî* are required, for Ijashne with Vendidad and Visparad 33 *tâî*, for Yasht-i-Rapithwin 13 *tâî*, for Darûn Bâj 5 *tâî*, or 7 when a priest becomes a *herhad*." In a footnote Dr. Haug adds—"According to other information the Darûn Bâj requires 7 *tâî* of double thickness, or 9 if performed in the house of a king or chief highpriest. In the Nîrangistân it is stated that the barsom twigs may be cut from any tree whose trunk is sound, and that they should be from one to three spans in length and a barley-corn in thickness, and their number either 3, 5, 7, 9, 12, 15, 21, 33, 69, or 551, according to the circumstances of the ceremony."

The barsom carried by the Magus on the gold plate has only 5 twigs or rods, but I can nowhere find any statement as to the particular ceremony for which a wand of 5 twigs is required. All the authorities, from Anquetil du Perron downwards, are content with stating the fact that the number varies according to the character of the sacrifice performed. Gerson da Cunha, the latest writer, simply says that "in the ordinary Darûn ceremony only 5 wires are used."*

Arms and Ornaments.

Both Medes and Persians were fond of gold ornaments; and in the sculptures of Persepolis and Nakshi Rustam we see a profusion of ear-rings, finger-rings, bracelets, armlets, and collars or torques, of which numerous examples are found in the present collection. The only arms represented are the short Persian sword called *Akinakês*, on the Magus, in Plate XIV; and a spear in the hands of the king in the chariot, in Plate XII. On the coins, however, are seen both the bow and the shield.

Ear-rings are represented by a single specimen, Plate XVI, fig. 1, which I have already noticed as being of superior workmanship. It represents a naked male figure with his hands on his hips, and his body bent double. The figure is well proportioned and beautifully made. Arrian mentions gold ear-rings set with precious stones as part of the treasures in the tomb of Cyrus at Pasargadæ: ἐνώτια χρυσοῦ τε καὶ λίθων κολλητά, Arrian, Anabasis, VI, 29.

Finger-rings are of two kinds, the coiled *snake* pattern and the *seal ring* pattern. Of the former there are two specimens in Plate XVI, the larger one weighing 176 grains, and the smaller one only 77 grains. Of the seal rings there are three specimens. 1st, A king seated on a chair, Plate XII, fig. 2, weighing 272 grains in my possession. 2nd, An animal running to left, Plate XV, fig. 5, weighing 60 grains, also in my possession. 3rd, Human-headed and winged bull walking to left, with an inscription of 4 letters, which will be discussed when I come to describe the coins. This seal is in the British Museum.

---

* See Gerson da Cunha, in Bombay Asiatic Society's Journal, XIV, 6.

Bracelets and *Armlets* are by far the most numerous of the ornaments found on the Oxus. There are no less than six specimens in Plate XVI, and I have seen several others. They are all of gold from one-eighth to one-sixth of an inch in thickness, and invariably terminate in animal's heads, such as goats, rams, lions and griffins. See Plate XVI, figs. 5 to 10. The horned heads are very skilfully arranged for actual wear, the horns being always thrown on the back of the head, or joined together behind the head so as not to catch in the dress. Bracelets are mentioned by both Herodotus and Xenophon as parts of the usual ornaments of the Persians.

Torques, or Collars are represented by only two specimens. All the principal figures in the sculptures at Persepolis are represented wearing neck-chains or collars. They formed part of the royal ornaments deposited in the tomb of Cyrus,* and they formed part of the spoil which the Greeks stripped from the dead Persians after the battle of Platæa.† The larger specimen, fig. 12, Plate XVI, is nearly one quarter of an inch in diameter. When complete it must have weighed about 7 ounces, as this fragment weighs 336 grains. It is of excellent workmanship.

The throne of the king would appear to have been a single high-backed chair. The only representation amongst the Oxus find is on the gold ring Plate XII, fig. 2. But other seats of a similar kind are found on the coins of the Satrap Datames or Tiridames. Plate XVII, fig. 5.

The Royal Chariot is well represented in Plate XII, both on the coins, and in an actual model chariot from the Oxus find. In this example there are two shafts or poles, each with a cross bar for two horses. The Royal chariot must therefore have had four horses as shown on the coins. The king is sitting in the chariot on a seat running fore and aft, and not across, while the charioteer is standing.

I have lately seen a small silver horse, which, from a hole on one side, would appear to have been attached to a chariot. It was solid, and came from the Oxus. It was a little larger than the horse in the Plate.

Animals.

The animals represented amongst the Oxus relics are the horse, the lion, the stag, a fish, a pigeon, a small bird like an eagle, and two snakes.

---

* Arrian, Exped. Alexandri, VI, 21.

† Herodot. IX, 80.

Also amongst the bracelets and collars there are heads of lions, dogs, goats, and bulls.

The principal figures are the stag, the sheep and the fish, the two former being represented in Plate XV, of full size, and the last only half size. The winged bull in the same Plate is also of full size. A first view recalls that of the Assyrian sculptures, both in subject and in style. The strongly displayed and exaggerated ribs and muscles of the bull, the stag, and the sheep suggest the possibility that they may even be real specimens of Assyrian art which had found their way to Bactria.

The most puzzling thing about these relics is their use. Many of them were certainly simple ornaments; such as the winged bull in Plate XV, which has eyelet holes for fastening it to some wooden or metal ground, such as the sheath of a sword. Professor Rawlinson supposes that the scabbard described by Curtius as *ex gemmâ erat vagina*, was formed "of a single piece of jasper, agate, lapis lazuli."* But as such a scabbard would have been fatal to the sharp edge of the sword, I have no doubt that the stones were only very thin slices fastened to a wooden sheath. In fact the scymitars found on the bodies of the dead Persians after the battle of Platæa are described by Herodotus as covered with "ornaments of gold."†

But as the stag, the sheep, and the fish of my collection could not possibly have been used for overlaying any flat surface, it has struck me that they may have been used as crests for helmets, or standards. The first two were certainly either nailed or possibly sewn with stout thread, to some larger object; but the fish must, I think, have been slung from the top of a standard as it has a stout ring or eyelet hole, on its left side, close to the end of the fin. It must therefore have been suspended perpendicularly with the mouth up.

Coins found on the Oxus.

In treating of the ancient coinage of Lydia and Persia it is necessary to remember that the former derived its monetary standard from Assyria and the latter from Babylonia. The value of the Lydian standard is placed beyond all doubt by the statement of Herodotus about the ingots of gold and electrum which Crœsus presented to the temple at Delphi.‡ According to his account the ingots were all of the same size, 6 palms long by 3 palms broad and 1 palm thick. Taking the Greek palm at 3·034375 inches, each ingot would have contained 502·898 cubic inches. Of these ingots 4 only were of pure gold weighing 2½ talents, the remaining 113 being of pale gold, or electrum, and weighing only 2 talents each. Then taking the specific gravity of water at 252·45 grains per cubic inch and that of pure gold at 19·258 times that of water, the weight of each of the 4 ingots of refined gold would have been 350·76 ℔s., which makes the Lydian talent just 140·3 ℔s. Now this was also the Assyrian talent, as we learn from the weights of the lions and ducks preserved in the British Museum, which give an Assyrian mina of 15,368 grains, and a Babylonian mina of 7,747 grains, or just one half of the other.[*] The same difference is still preserved at the present day as the *man* of Shirâz and Bagdâd is just double that of Tabrez and Bushir, the average of the former being 14·06 lbs. and that of the latter being only 6·985.[*] The weight corresponding to the ancient talent is the *toman*, or *dah-man*, that is 10 *mans*, of which the Bagdâdi *toman* averages 140·6 lbs., and the Tabrezi *toman* 69·85 lbs., the former being the modern representative of the Assyrian, and the latter of the Babylonian talent.

---

* Ancient Monarchies, III, 208, 2nd edition.

† Herodotus, IX, 80.

‡ Herodot., Hist. I, 50.

But these values are only approximations, as it is very unlikely that the Lydian ingots were made in exact whole numbers of Greek measures, and we know that all measures of weight suffer degradation in the lapse of time. To obtain more exact values we must refer to the statements of ancient authors, and compare them with the weights of the actual coins which have come down to us.

The earliest fact bearing on this subject is the statement of Herodotus, in his account of the satrapies of Darius, that the value of gold in Persia was 13 times that of silver. But this is directly at variance with another statement that the Babylonian talent was equal to 70 Euboic minæ, because as the silver payments were made in the Babylonian standard and the gold payments in the Euboic, this would reduce the rate of silver to gold from 13 down to 11¾. The true number of *minæ* in the Babylonian talent was 78, and not 70, as we may deduce from the difference of the rates between silver and gold which prevailed in Eubæa and Persia. Thus, as the rate of 10 is to 13, so are 60 minæ to 78 minæ. By applying this corrected value of the Babylonian talent to the text of Herodotus, all the discrepancies, which have hitherto puzzled commentators, disappear at once. He gives the total amount of the nineteen silver paying satrapies at 7,600 Babylonian talents, which his text says are equal to 9,540 Euboic talents, instead of 9,880 which is the true value at 13 rates. And that this was the actual rate that he used in the reduction is proved by his final total, which after adding the quota of the 20th satrapy, namely, 360 talents of gold, or 360 × 13 = 4,680 talents of silver, he makes 14,560 talents.[†] The sum of these two, 9,880 plus 4,680, is exactly 14,560 talents as stated by Herodotus.

---

[*] — Kelly's Cambist—Prinsep's Useful Tables.

[†] Herodot., Hist., III, 96. I made this correction so long ago as 1858. The total of silver payments is said by Mr. Rawlinson (Herodotus, Vol. II, 486) to be 7,740l talents, but he has overlooked the fact that 140 talents of the 4th satrapy were not

As it is important to establish the correctness of the rate of 13 silver to 1 gold as noted by Herodotus, I append here the details of the sums actually paid into the Persian treasury.

Satrapies—Talents.

No. I.—400
II.—500
III.—360
IV.—360—(500 less 140 for cavalry not paid into Treasury.)
V.—350
VI.—700
VII.—170
VIII.—300
IX.—1000
X.—450
XI.—200
XII.—360
XIII.—400
XIV.—600
XV.—250
XVI.—300
XVII.—400
XVIII.—200
XIX.—300

7,600 Babylonian talents of 78 Attic minæ
equal to 9.880 Euboic talents, of 60 Attic minæ

at 13 to 10——so 7,600 × $\frac{13}{01}$ = 9,880 Euboic talents of silver
Add XXth satrapy 360 gold × 13 = silver 4,680

which gives a total of 14,560 Euboic talents of silver

exactly as stated by Herodotus.

The next fact regarding Persian money we get from Xenophon, who states that the talent was equal to 300 Darics, and the *siglos* was equal to 7½ Attic oboli.* Taking the Attic drachma at 67·2 English grains and the obolus at 11·2 grains, the weight of the *siglos*, or Persian silver coin, would

---

received by Darius. The actual total of silver payments was therefore only 7,600 talents, as I have stated above.

* Xenoph., Anab., I—Ὁ δὲ Σίγλος δύναται ἑπτὰ ὀβολοὺς καὶ ἡμιοβόλιον.

have been exactly 84 grains. But this value we know from numbers of existing coins to be too low, as the average of 10 good specimens, which I have recorded is 85·19 grains, of which 6 are of 86 grains and upwards, the heaviest reaching 87·9 grains. Accordingly I find that Hesychius fixes the value of the *siglos* at 8 Attic oboli, which would make it 11·2 × 8 = 89·6 grains in weight. His words are *Σίγλος νόμισμα Περσικὸν δυνάμενον ὀκτὼ ὀβολοὺς 'Αττικούς.* The siglos is also mentioned in Attic inscriptions, according to Lenormant.* It seems probable therefore that the true value may have been between 7½ and 8 oboli. Now several ancient writers state that the Persian Daric was equal to 20 Attic drachms; and as we gather from Xenophon that it was also equal to 20 Persian *sigli*, I conclude that this difference in value must have been due solely to the difference of rate of silver to gold in the two countries. In Greece, owing to the successful working of the gold mines in Thrace, the rate was only 10 to 1, while in Persia it was 13 to 1. That this value of 13 to 1 was not a fluctuating rate is proved by the fact that *Sím*, the Persian word for silver, has also the meaning of "*one thirteenth*." I believe therefore that the weight of the *siglos* was to that of the Attic drachma exactly in the ratio of 13 to 10, which would make the *siglos* just 87·36 grains, or as nearly as possible intermediate between the two values given by Xenophon and Hesychius.

Accepting this as the true weight of the *siglos*, the value of 1 *Daric*, or 20 *sigli*, will be 1747·2 grains of silver, and the Persian talent, which was equal to 300 gold Darics in *value*, and to 300 × 20 = 6000 silver *sigli* in *weight*, will be 524,160 grains, or 74·88 lbs. At 84 grains to the *siglos*, the Persian talent would have been exactly 72 English pounds avoirdupois. Having thus established the normal weight of the *siglos* at 87·36 grains, I will now proceed to fix the weights of other Persian coins beginning with the *Daric*.

The *Daric* was the common coin of the ancient Persian empire, just as the sovereign or pound is the common coin of England at the present time. In value it was equal to 20 *sigli*; and as the rate of silver to gold was 13 to 1, the gold *Daric* must have been exactly one-thirteenth of the weight of 20 *sigli*, or 87·36 × $\frac{20}{13}$ = 134·4 grains, which is the full weight of the Attic stater. I am aware that many numismatists consider the *Daric* to have been a lighter coin than the Attic stater. But I believe that this opinion has been created by simply ignoring the fact that the Darics were much longer in circulation than the Attic staters of Philip and Alexander, and by comparing Attic staters of *full* weight with the *averages* of a number of *worn* Darics. For instance Mr. Head makes the normal weight of the Darics only 130 grains.† But as he makes the normal weight of the siglos to be 86·45 grains, the Daric should be 86·45 × $\frac{20}{13}$ = 331 grains exactly. He gets the lower weight by taking the rate of silver at 13·3 instead of 13 as distinctly stated by Herodotus, and as actually used by the historian in his reductions.

---

* Revue Numismatique, 1867, p. 362.

† Coinage of Lydia and Persia, pp. 29-30.

I have taken the normal weight of the *Daric* as 134·4 grains, or exactly equal to the Attic stater by raising it from the ascertained weight of the Persian *siglos* of silver. I will now compare the actual Darics that have come down to us with a number of Attic staters. For this purpose I have examined the catalogues and descriptions of nine different collections, from which I find that 21 staters of Philip, 42 of Alexander, 3 of Arrhidæus and 12 of Lysimachus, or altogether 78 Attic staters give an average weight of 132·11 grains. Taking the normal Attic stater at 134·4 grains, the average loss of these 78 staters is 2·29 grains. With these staters we may compare 125 Darics, which formed part of a hoard of 300 found in the canal of Xerxes. The average weight of these 125, as ascertained by H. P. Borrell, was 129·4 grains, while many of the heavier pieces reached 132 grains.* Now adding a loss of 2·29 grains to 129·4, we get 131·69 as the approximate normal weight of the Daric. But as many of the best pieces actually weighed 132 grains I think that the normal weight of the Daric may fairly be placed as high as 133 grains. It appears also from Hussey's examination of the gold staters in the British Museum and other collections that the average weight of 71 staters of Philip, Alexander and Lysimachus was a little over 132 grains, the heaviest only reaching 133 grains.† It must be remembered also that the Museum coins are selected specimens, chosen specially for the goodness of their preservation. I believe therefore that if a similar selection of the choicest specimens had been made from the 300 Darics found in the canal of Xerxes, their average weight would most probably have also reached 132 grains.

The Daric was divided into 20 silver shekels, or *sigli*, just as the English sovereign is divided into 20 shillings. The weight of the *siglos* itself has already been discussed. But the multiples and divisions of the *siglos* have hitherto received but little attention from numismatists with reference to their value. For the sake of mere convenience it seems almost certain that there must have been a quarter Daric piece either of gold or of silver. No gold coin of this value has yet been found, but there is a considerable number of large silver pieces weighing from 396 up to 438·5 grains which are certainly *quarter Darics* in value, whatever their name may have been. I have a record of the weights of 22 of these coins, of which the five heaviest average 426·66 grains, the maximum weight being 433·5 grains. Now taking the *siglos* at 87·36 grains, the normal weight of the *pentasiglon* or quarter Daric, would have been 436·8 grains, or only a trifle more than the actual weight of these large silver coins. The types of these coins are the king in a chariot drawn by four horses, and a galley filled with rowers on the reverse. There is also a quarter piece of the same types, or one-sixteenth of a Daric.

---

* H. P. Borrell in Numismatic Chronicle, VI, 153, and Max. Borrell in personal communication.

† Hussey's Essay, p. 16.

The next silver coin in weight is the Aryandic of which Herodotus has given a brief account. These coins range from 220 to 236 grains in weight which is too heavy for the eighth of a Daric, or 218·4 grains at the rate of 13 to 1. It would, however, exactly agree with the required weight at 14 rates, as 134·4 × $\frac{14}{8}$ = 235·2 grains. But so far as I am aware there is no authority for supposing that gold was scarce or silver common in Egypt during the governorship of Aryandes.

The next coins in weight are those of the Satraps of Asia Minor, Tiribazus, Pharnabazus, Tiridames, and others. Mr. Head takes the normal weight of their coins at 172·9 grains, or just twice that of the *siglos*, which he fixes at 86·45 grains. According to my valuation of the *siglos* at 87·36 grains the full weight of the satrapal coins of Asia Minor would be 174·72 grains. The difference between these values is very little; but I altogether dissent from Mr. Head's identification of the *siglos* with the Persian *drachm*. This name I would assign to the *double siglos* of the Satraps on the following grounds. At the present day the three smaller weights of the Persian system are the *Dânik* or *Dâng*, the *Mishkâl*, and the *Darm* or *Diram*, which I would identify with the *Danakê*, the *siglos*, and the *Drachma* of ancient writers. As the *Darm* is equal to 2 *Mishkâls*, it corresponds exactly with the satrapal silver coins of Asia Minor, which are just double the weight of the *siglos*. The *Darm* was therefore one-tenth of a Daric.

The ancient Persian *siglos* was divided into 6 *Danakês*, just as the Mishkâl is now divided into 6 *Dâniks* or *Dângs*; and as the *siglos* was $\frac{1}{20}$th of the Daric, so the Dânik was $\frac{1}{120}$th, and its multiple of 4 Dâniks [Chahâr-Dânik] was $\frac{1}{30}$th, of a Daric. A specimen of this last very rare coin, weighing 55 grains, is given in Plate XVII fig. 4. The *Hemisiklon* is mentioned by Josephus, and the *Hemisiklion* by Hesychius. The *half-siglos*, or *quarter darm*, is such an obviously useful division that one would have expected the coin to have been very common. But so far as I am aware, not a single specimen of this value has yet been found of the royal archer type.

The *Dânik* itself is mentioned by three different authors, Pollux, Hesychius and Suidas. Pollux writes the name *Danikê* or *Danakê*, or *Danikon*, and says that it was a Persian coin. Hesychius calls it *Danaë*, and says that it was worth more than an obolus.* But this form of *Danaë* is certainly a mistake for *Danakê*, as he names the half coin *Hemidanakion.* Suidas also writes the name *Danakê*, and repeats what was previously said by Hesychius, that this coin was placed in the mouths of the dead. Comparing the statement of Hesychius, that the *Danakê* was worth more than an obolus, with the present division of the mishkâl or shekel into 6 *Dâniks*, it results that the normal weight of the *Danakê* must have been upwards of 14 grains, or more exactly 87·36 divided by 6 = 14·56 grains. Coins approaching this weight, that is from 12 to 13 grains, are not uncommon, but they are all of later date than the incuse Darics and sigli. According to Mr. Head these are *obols* of the Babylonian standard of 14 grains. The name of *Danakê* at once suggests the Indian silver *tangka*, which was of exactly the same weight, that is the fourth part of the 56 grains *karsha.*

---

* Δανά νομισμάτιόν τι βαρβαρικὸν δυνάμενον πλέον ὀβολοῦ ὀλίγῳ τινι.

Specimens of the *half-Dânik*, or *Hemi-danakion* of Hesychius are also known, but they are very rare. One of 6 grains with a city wall on one side, and the kneeling archer on the other is noticed by Mr. Head.

I can find no mention in ancient authors of the copper coinage of Persia; but a few specimens have come down to us, three of which are noted by Mr. Head. I possess a rather fine example of his Plate XIII, fig. 23, weighing only 24 grains. If the old Indian rate of 40 copper to 1 silver prevailed also in Persia, this coin would have been just one-twentieth of the Danake, or Persian obolus. The relative values of the ancient Persian coins just described will be best understood by arranging them in tabular form.

	Gold	*grains*		*Value in silver Sigli.*
1	Double Daric,..........	268·8	=	40 sigli or shekels.
1	Daric, ...	134·4	=	20 „ „
	Silver.			
1	Pentasiglon = ...	436·8	=	5 „ „
1	Disiglon or Darm =	174·72	=	2 „ „
1	Siglos or Shekel,......	87·36	=	1 siglos.
1	Chahâr Dânik,.........	58·24	=	$\frac{2}{3}$ siglos—the Indian karsha.
1	Double Danik,.........	29·12	=	$\frac{1}{3}$ siglos—the Indian kona.
1	Dânik or Danake, ...	14·56	=	$\frac{1}{6}$ siglos—the Indian tangka.
$\frac{1}{2}$	Dânik, Hemidanakion,	7·28	=	$\frac{1}{12}$ siglos.

In Sanskrit Dictionaries I find mention of a coin named *Ropaka*, which is said to be of the value of one-seventieth of the Indian Suvarṇa. As this would be an extremely inconvenient sub-division, I think it almost certain that the coin was one-sixtieth of the Persian Daric and Attic stater of Bactria, which was just equal to six-sevenths of the Indian Suvarṇa. A coin of this value certainly existed in India, but it was a half *karsha* in value, and was usually called *kona.*

DESCRIPTION OF THE COINS.

Persian Kings.

No. 1. Gold. *Double Daric*, 0·8 inch. Pl. XVII, fig. 1. Author. 255 grains.

Obv. King to right with radiated tiara and long beard kneeling on right knee, holding bow in left hand and arrow in right hand. Quiver arrows at back.

Rev. Rude shapeless incuse.

No. 2. Gold. *Daric*, 0·7 inch. Author. 132·5 grains.

Obv. King as on No. 1, Mr. Head, Pl. I, 16.

No. 3. Gold. *Double Daric*, 0·75 inch. Author. 256 grains.

Obv. King as on No. 1; but with lofty head-dress and holding a javelin in right hand.

No. 4. Gold. *Double Daric*, 0·75 inch. Author. 256 grains.

Obv. King as on No. 3; but with radiated tiara. In the field to left a wreath, and some indistinct object above.

No. 5. Gold. *Double Daric*, 0·75 inch. Author. 255 grains.

Obv. King as on No. 4. In the field to left the Greek letters Φ and Λ.

Rev. Two ovals with rough marks inside incuse.

No. 6. Gold. *Double Daric*, 0·75 inch. Author. 255 grains.

Obv. King as on No. 4, but with short beard, and long points to his crown. In the field to left the Greek letter φ, and a Greek monogram forming MHT.

Rev. A crescent on each side with three marks inside, the whole in a symmetrical incuse, Mr. Head, Pl. I, 15.

No. 7. Gold. *Daric*, 0·65 inch. Author. 129·5 grains.

Obv. King as on No. 4.

No. 8. Silver. *Pentasiglon* or *Quarter Daric*, 1·3 inch. Author. 407¾ grains.

Obv. King in four-horse chariot, with driver in front, and an attendant on foot behind the chariot. Plate XII, fig. 6.

Rev. Boat with rowers and sails, on zigzag waves, surrounded by a circle.

No. 9. Silver. *Pentasiglon* or *Quarter Daric*, 1·1 inch. Author. 400 grains. Plate XII, fig. 7. British Museum specimens.

Obv. King in four-horse chariot as on No. 8.

Rev. Boat with rowers on zigzag waves.

No. 10. Silver. *Aryandic* or *two and half sigli*, 0·95 inch. Author. 219 grains. Plate XVII, fig. 2. See Mr. Head, Plate I, 20.

Obv. King bearded with radiated crown, kneeling on right knee, holding a bow in left hand, and a javelin in right hand.

Rev. Large incuse with uncertain objects.

No. 11. SILVER. *Aryandic*, 0·9 inch. Author. 226·5 grains. Plate XII, fig. 5.

Obv. King as on No. 10. In the field to left the Greek letters ΔH.

Rev. Large incuse as on the last.

No. 12. SILVER. *Daric*, 0·6 inch. Author. 82 grains. Mr. Head, Plate I, fig. 25.

Obv. King as on No. 1, with arrow in right hand.

No. 13. SILVER. *Daric*, 0·6 inch. Author. 83 grains. Mr. Head, Pl. I, 25.

Obv. King as on No. 10.

No. 14. SILVER. *Four Dânik piece* or *two thirds of a siglos*, 0·55 inch. Author. 55·5 grains. Plate XII, fig. 4.

Obv. As on No. 10.

No. 15. SILVER. *Daric*, 0·6 inch. Author. 83 grains. Mr. Head Pl. I, 28.

Obv. King kneeling on right knee, and shooting an arrow.

PERSIAN SATRAPS.

Tiribazus, B. C. 400—380.

No. 16. SILVER. *Double Siglos*, 0·9 inch. Author. 154 grains. Plate XVII, fig. 3. Duc du Luynes, Pl. I, 1, 2, 3.

Obv. Jupiter or Bâl, standing to left, holding spear in left hand and bird on right. Legend in Phœnician characters to right *Tiribazu.*

Rev. Ormazd; a human body above the solar disc. In his left hand a flower, in the right a wreath.

Pharnabazus, B. C. 400—380.

No. 17. No coin of this Satrap has come into my possession, but I have received a bad impression of a single specimen of the same type as the coin of Tiridames, Plate XVII, fig. 4.

Tiridames.

No. 18. SILVER. *Double Siglos*, 0·85 inch. Author. 150 grains. Plate XVII, fig. 4. Duc de Luynes, Pl. II, 9, 10.

Obv. Helmeted and bearded head of Satrap to right. Legend to right in Phœnician characters *Tiridamu.* The Duc de Luynes reads the name as *Dernes*, and M. Waddington as *Datames.* I have adopted the reading of M. Lenormant.

Rev. Female head to the front.

No. 19. SILVER. *Double Siglos*, 0·9 inch. Author. 160 grains. Plate XVII, fig. 5. Duc de Luynes, Pl. II, 5, 6, 7.

Obv. Jupiter seated to right. Legend in Phœnician characters to left *Bâl Tars*, "the god Bâl of Tarsus."

Rev. Satrap seated to right, clad in the *Kandys* or Persian tunic, the *Anaxyrides*, or Persian trowsers, and the Persian felt tiara with lappets tied under the chin. Legend to the left in Phœnician characters *Tiridamu.*

Pharaspes, or Pharnaspes.

Of this Satrap 3 gold coins and 1 gold ring are now known, of which all but one of the coins came from the Oxus. Of the Oxus relics I received impressions, from which the photograph of the ring, Plate XVII, fig. 6, was taken. Figs. 7 and 8 are taken from the photographs of the coins in the British Museum. Of the third coin which is similar in type to fig. 9, I have only an impression, the original having gone, I believe, to the British Museum. The two coins figs. 7 and 8 have been published by Mr. Percy Gardner in the Numismatic Chronicle.

No. 20. Gold-ring. The only notice that I have seen of this ring is the following—"*Society of Antiquaries:* M. Franke exhibited a gold ring engraved with a man-headed winged bull, wearing a Persian tiara, and a caduceus without a handle, which is the zodiacal sign for Taurus. From a Pehlavi inscription on the seal Mr. Percy Gardner identified it as belonging to the Persian king *Vahaspes*, who reigned about 70 years after the death of Alexander the Great." I think that the second letter may be *r*, and accordingly I read the name as *Pharaspa*, or *Pharnaspes.* Arrian mentions a Mede named *Baryaxes* who had put the royal tiara on his head and called himself king of Media and of Persia. He was brought by Atropates to Alexander at Pasargadae, where he was put to death. I think it not impossible that these coins may belong to him, or perhaps he may be identified with Pharasmanes, king of Chorasmia [Arrian, Anab. IV. 15], who was also a contemporary of Alexander.

No. 21. Gold. *Stater.* British Museum, 0·75 inch, weight 135·9 grains, from the Oxus. Plate XVII, fig. 7. See Numismatic Chronicle XIX, Plate I, fig. 2.

Obv. Head of Satrap to right, bearded and clad in soft felt tiara with long lappets tied under the chin. Legend to left in ancient Pehlavi characters.

Rev. Satrap in four horse chariot to right. Legend below in ancient Pehlavi characters.

No. 22. Gold. *Stater*, British Museum, 0·8 inch, weight 132·9 grains, from Payne Knight's collection. Plate XVII, fig. 8. See Numismatic Chronicle XIX, Pl. 1, fig. 3.

Obv. Helmeted head of Pallas to right, ΠΓ under chin.

Rev. Victory to front, with palm over left shoulder and wreath in right hand. To right, legend in ancient Pehlavi characters, and one letter to left.

As this piece is an undoubted copy of Alexander the Great's gold coins, it is possible that the letters ΠΓ or 73, may stand for the date, which would be 312—73 = 239 B. C.

No. 23. Gold. *Double stater*, only a paper impression seen. The coin is similar to fig. 9, Plate XVII, but with the ancient Pehlavi legend of the above seal and coins.

No. 24. Gold. *Double stater*, 0·85 inch, weight 256 grains. Author. Plate XVII, fig. 9.

Obv. Youthful head of Alexander the Great, covered with the skin and tusks of an elephant's head.

Rev. Victory winged, with palm branch and wreath to left. In the field to left, head of Bukephalos, and below the Greek letters ΔΙ.

As these are the well known types of Alexander the Great's gold money, this piece was most probably issued from one of the Eastern mints some time during his reign.

Alexander the Great.

No. 25. Of Alexander the Great about one hundred tetradrachms and as many drachms were comprised in the Oxus find, the greater number of them in very poor condition. I have kept one of the tetradrachms which is in very good preservation on the reverse. It is of the usual type of the seated Zeus, with the name only in small neat characters. In the field to left is a three quarter horse feeding. Beneath the chair is a monogram formed of the letters ΠΑΛΗ and under the eagle a second monogram No. 1351 of Müller, which with the horse is found on the coins of the Larissa mint.

Andragoras.

Contemporary with Alexander are the coins of Andragoras in gold and silver, which bear the name only without the title of king. Admitting the correctness of the conclusion, the coins must belong to the person mentioned by Justin as Andragoras, a Persian nobleman, who was made governor of Parthia by Alexander, to whom the kings of the Parthians afterwards traced their origin.* A second Andragoras, also a governor of the Parthians, is afterwards mentioned by Justin, as having been slain by Arsakes, the founder of the Parthian monarchy, in B. C. 248. If the title of ΒΑΣΙΛΕΩΣ had been upon these coins, I should have assigned them to him at once, as one of the governors who followed the example of Diodotus and revolted against Antiochus II. of Syria. But the absence of the title of King is, I believe, conclusive that the date cannot be later than the time of Alexander the Great, as all his generals assumed the title and placed it on their coins.

---

* Justini, XII. 5. Parthis deinde domitis, praefectus his statuitur ex nobilibus Persarum Andragoras; unde postea originem Parthorum reges habuere.

No. 26. Gold. *Stater*, 0·75 inch; weighing 132 grains. Author. Duplicate, British Museum. Triplicate, Author. There are numerous forgeries of which I have seen seven specimens.

Obv. Bare and bearded head of Jupiter to right, the hair very formally arranged. Behind the head a monogram forming the letters ΑΤΡΟΠΑΤΗ. See Numismatic Chronicle, Vol. XIX, p. I, and Plate I, No. 1.

Rev. The king helmeted being driven by Victory in a four-horse chariot. Three dots in the field below the fore-feet of the horses. In the exergue (ΑΝΔ) ΡΑΓΟΡΟΥ. The British Museum coin has the name complete at the beginning, but deficient at the end.

No. 27. Silver. *Tetradrachma*, 0·95 inches, weight 253 grains. Author. A duplicate in better preservation and larger has gone to the British Museum, 1·1 inch, weight 255·8 grains, see Numismatic Chronicle, Vol. I, 3rd Series, Pl. II, fig. 1.

Obv. Turreted female head to right. Monogram behind the head, the same as on the gold coins.

Rev. Pallas armed with helmet, spear and shield to left, holding a bird in her right hand. Legend to right ΑΝΔΡΑΓΟΡΟΥ.

The silver coins appear to me to be of much finer execution than the gold coins.

Coins of Cities.

Akanthus in Macedonia.

No. 28. Silver. *Tetradrachma*, 1·1 inch; weight 253·5 grains. Author. Duplicate 1·0 inch, weight 250·5 grains. Author.

Obv. Lion devouring a bull, surrounded by a circle of dots. Over the Lion the Greek letter Θ.

Rev. Four incuse squares.

The duplicate has the same Greek letter over the bull.

Aspendus in Pamphylia.

No. 29. Silver. *Disiglon*, 0·9 inch. I have seen six specimens and have received impressions of others.

Obv. A slinger preparing his sling. In the field to right a *triquetra* of three human legs; and to the left the legend ΕΣΤFΕΔΙΙΥΣ Estwediius.

Athens.

No. 30. Silver. *Tetradrachma*, 0·95 inch. Weight 220 grains. Author. Very much worn.

Obv. Archaic helmeted head of Pallas to right with full elongated eye.

Rev. Owl standing to right in indented square. To left, olive branch and crescent. To right ΑΘΕ.

No. 31. Silver. *Tetradrachma*, 0·9 inch. Weight 266 grains. Author. Duplicate, native dealer.

Obv. Archaic head of Pallas, but with side eye.

Rev. Owl, olive twig, and crescent, with ΑΘΕ as before; but between the owl and inscription the letter Δ surmounted with a sloping line, perhaps intended for ΔΙ or ΙΔ.

No. 32. Silver. *Tetradrachma*, 0·9 inch. Weight 260 grains. Author. Plate XVIII, fig 1. See Numismatic Chronicle, XIX, Plate 1, fig. 7.

Obv. Helmeted head of Pallas to right, of later workmanship, with earrings, and roll of hair under back of helmet. In field to left a Greek monogram forming ΜΟΤΥ or ΤΙΜΩ.

Rev. A well formed owl to right, with olive twig and crescent, and the usual legend ΑΘΕ.

No. 33. Silver. *Didrachma*, 0·7 inch. Weight 121 grains. Author. Exactly similar to the last. The British Museum coin, Numismatic Chronicle, XIX, Pl. I, fig. 7, appears to be a much worn duplicate of this didrachma.

Uncertain.

No. 34. *Tetradrachma*, 0·85 inch. Weight 250 grains. Author. Duplicate. British Museum, 260·2 grains.

Obv. Helmeted head of Pallas to right, as on the coins of Athens.

Rev. Owl standing with legs together. To left, olive twig and crescent. To right, the Greek letters ΑΙΓ. See Numismatic Chronicle, XX, Pl. X, fig. 5.

In his notice of this coin Mr. Percy Gardner states his opinion that this, like the others just described, is an "imitation of Athenian coins current in the far East about the time of Alexander." The letters ΑΙΓ he takes "to begin the name of a Satrap, not of a city, for cities did not in "those regions place their names on their coin." I confess myself that I should rather prefer the name of some city, connected with Athens. In my copy of Combe's Description of the Hunter Collection which had previously belonged to H. P. Borrell, I remember seeing a new attribution by Borrell of a coin of this type to Aegium in the Troad. I write from memory, as I have no books to refer to, all my Numismatic Books having been burnt in the Pantechnicon.

No. 35. SILVER. *Drachma*, 0·5 inch. Weight 54 grains. Author.

Obv. Helmeted head of Pallas, as on Nos. 32 and 33.

Rev. An eagle to left with head turned backward. Over the tail of the bird a double sprig.

Byzantium.

No. 36. SILVER. *Drachma* (?), 0·65 inch. Weight 74 grains. Author. I have seen a second coin.

Obv. Bull walking to left. Below a fish, and above the letters ΠY.

Rev. Incuse cross, like the sails of a windmill.

Kelenderis.

No. 37. I have seen the impression of a single coin of the common type.

Tarsus.

The coins of Tarsus that I have seen number about 25; but at least an equal number of impressions has been sent to me of which I have taken no account. They comprise several varieties, and probably range from B. C. 400 to 250. I have given only one of the coins in the accompanying Plates, as they can be referred to in other works, more especially in the valuable work of the Duc de Luynes.

No. 38. SILVER. *Disiglon*, 0·95 inch. Weight 163·5 grains. Author. See De Luynes, Satrapies, Pl. IV, *Gaos.*

Obv. Jupiter of Tarsus sitting with spear in left hand and eagle at right hand. Legend in Phœnician characters to right *Bál-Tars.*

Rev. Lion devouring a bull. Legend in Phœnician letters in two lines, as read by De Luynes, *Gahosh Mazarka.* The satrap Gaos ruled from B. C. 386 to 384. I have not placed his coins with those of the satraps, as I believe that the reading of his name is doubtful.

No. 39. SILVER. *Disiglon*, 0·85 inch. Weight 150 grains. Author. Also a duplicate. 158 grains.

Obv. Jupiter of Tarsus as on the last, but with a bunch of grapes in his right hand. Phœnician legend, *Bál-Tars.*

Rev. Lion devouring a stag. Phœnician legend over the lion *Mazarka.* In the field O.

No. 40. SILVER. *Disiglon*, 0·78 inch. Weight 162·5 grains. Author. See De Luynes, Satrapies, Pl. IX, 13.

Obv. Jupiter of Tarsus seated. Phœnician legend *Bál-Tars.*

Rev. Lion walking to left, tail undulated behind. Phœnician legend *Mazarka.*

No. 41. Silver. *Tetradrachma*, 0·9 inch. Weight 250 grains. Author. See De Luynes, Satrapies, Pl. IX, 18.

Obv. Jupiter seated, no legend.

Rev. Lion walking to left with tail between legs, over his back the Greek letter Γ.

No 42. Silver. *Tetradrachma*, 0·95 inch. Weight 259 grains. Author. See De Luynes, Satrapies, Pl. X, 26.

Obv. Jupiter of Tarsus seated : no legend.

Rev. Lion walking to left with tail between his legs. Over his back the anchor of Seleukus I. with the Greek letter Π. Below a crescent with a Greek monogram forming ΣΑΜΟΣΑΤ. See Mon. 9 of Syrian coins in my List in Numismatic Chronicle.

No. 43. Silver. *Tetradrachma*, 0·95 inch. Weight 256 grains. Author. Plate XVII, fig. 10.

Obv. Jupiter of Tarsus seated to left. In front the head of Bukephalos.

Rev. Lion as on No. 42 with anchor of Seleukus I. above. Below the Greek letters ΔΙ.

No. 44. Silver. *Hemidrachma*, 0·5 inch. Weight 31 grains. Author.

Types of both sides the same as the last, including the head of Bukephalos and the letters ΔΙ.

Coins of Kings.

Pixodarus, King of Caria.

No. 45. Gold. *Quarter stater*, 0·4 inch. Weight 29 grains. Mr. Gibbs.

Obv. Female head.

Rev. Zeus of Labranda carrying the double-headed axe. Legend to right ΠΙΞΩΔαρου.

Lysimachus, King of Thrace.

No 46. Silver. *Tetradrachma*, of the usual size and in good condition. Native dealer.

This is one of the common coins of Lysimachus, which has remained in the native owner's hand as he wanted 100 £ for it!

Seleukus I. Nikator.

No. 47. Silver. *Tetradrachma.* See British Museum Catalogue of Greek coins, Seleucid kings of Syria, Pl. I, figs. 3 and 4.

Obv. Head of Alexander as Herakles clad in lion's skin.

Rev. Zeus seated with spear in left hand and eagle in right hand—ΒΑΣΙΛΕΩΣ ΣΕΛΕΥΚΟΥ.

I have seen three specimens of this coin, and impressions of several others.

No. 48. Silver. *Tetradrachma*, 0·95 inch. Weight 260 grains. Author. Two fine specimens. Three others seen.

Obv. Laurelled head of Zeus to right, in fine preservation.

Rev. Pallas with thunderbolt in hand, driving a chariot drawn by four horned elephants. Anchor above. Belows ΣΕΛΕΥΚΟΥ ΒΑΣΙΛΕΩΣ. Greek monogram over the elephants forming ΣΕΛΕΥΚΕΙΑΣ.

No. 49. Silver. *Tetradrachma*, 1·00 inch. Weight 259 grains. Author.

Obv. Laurelled head of Zeus to right; very bold relief and very fine preservation. Monogram behind forming ΑΡ.

Rev. Type same as the last.

Nos. 50, 51. *Drachmas*, same types and with the same legend, but monogram same as No. 32, British Museum Catalogue. Weights 63·5 and 63 grains, and both 0·60 inch in size.

No. 52. *Hemidrachma*, 0·50 inch. Weight 26 grains. Author. Same types, but with only 2 elephants to the chariot. Legend ΒΑΣΙΛΕΥΟΝΤΟΣ only. Above is the letter Δ in a circle over the elephants.

This is the only coin that I have seen with this title amongst some 30 specimens of the small money.

Seleukus and Antiochus.

Nos. 53, 54. Silver. *Tetradrachmas* of Phœnician standard, 1·00 and 0·90 inch, weighing 215 and 206 grains. Author. Mr. Gardner suspects a similar coin in the British Museum, weighing 212·6 grains, to be plated: but my 2 coins are good silver. See Plate XVIII, fig. 2.

Obv. Laurelled head of Zeus to right. On No. 54 the letter E below.

Rev. Pallas with thunderbolt in chariot drawn by four horned elephants. Legend in 3 lines ΒΑΣΙΛΕΩΣ ΣΕΛΕΥΚΟΥ ΑΝΤΙΟΧΟΥ. Monogram above elephants forming ΔΩ in a circle.

On the peculiar legend of these coins Mr. Gardner has the following note*: "The meaning which one would naturally attach to it is that the "coin was issued, while Seleukus was king, by his son Antiochus, who was "viceroy of the Eastern provinces of the empire. The type belonging to "Seleukus rather than to his son would tend to support this view." That this is the true meaning of the legend is decisively proved by the smaller coins of this type which follow:

Nos. 55, 56, 57, 53. Silver. *Drachmas*, 0·60 and 0·65 inch.

---

* Numismatic Chronicle, XIX, 10.

Weights 50·5, 48·0, 43·0, 50·0 grains. Author. Plate XVIII, figs. 5, 6.

Obv. Laurelled head of Zeus to right.

Rev. Pallas with thunderbolt in chariot drawn by 2 elephants. Inscription in three lines ΒΑΣΙΛΕΩΝ ΣΕΛΕΥΚΟΥ ΚΑΙ ΑΝΤΙΟΧΟΥ. Above the elephants the letter Δ in a circle.

This curious legend shows most conclusively that the coins belong to the two "Kings Seleukus and Antiochus." Now we know from Plutarch* and Appian that when Seleukus gave up Stratonike to his son, he at the same time granted him the title of king and made over to him the whole of the Eastern half of his kingdom from the Euphrates to the Indus. As his marriage with Stratonike took place either in B. C. 294 or 293, I think that Antiochus may have issued these coins about the same time to commemorate his acquisition of the royal title.

Nos. 59, 60. SILVER. *Oboli,* 0·35 and 0·30 inch. Weight 8·5 and 8·0 grains. Types as on the preceding coins, including monogram Δ in circle, but without any inscription. Plate XVIII, figs. 3, 4.

Antiochus I.

Nos. 61, 62. GOLD. *Stater,* 0·75 and 0·72 inch. Weight of each 130 grains. Author. I have seen several others.

Obv. Diademed head of king to right. No. 61 of middle age, No. 62 of old age.

Rev. Apollo seated an the Cortina, resting left hand on bow and holding arrow in right hand. In the field Δ. Inscription in two lines ΒΑΣΙΛΕΩΣ ΑΝΤΙΟΧΟΥ.

No. 63. GOLD. *Stater,* 0·70 inch. Weight 129·5 grains. Author.

Obv. Diademed head of king to right, old portrait.

Rev. Apollo as on No. 61, star above, and lyre in field below, with monogram forming ΔΙ or ΔΙΤ. Inscription as before.

Nos. 64, 65. SILVER. *Tetradrachma* and *drachma* of same type as the gold coins just described.

No. 66. SILVER. *Drachma,* 0·65 inch. Weight 61 grains. Author. Plate XVIII, fig. 13. See gold coin of Seleukus of same type in British Museum Catalogue of Seleucid kings, Plate I, fig. 6.

Obv. Diademed head of Antiochus to right with bull's horn above ear.

Rev. Horned horse's head (Bukephalus?) to right, monogram to right forming ΑΠΑ. Monogram below indistinct. Inscription ΒΑΣΙΛΕΩΣ ΑΝΤΙΟΧΟΥ.

No. 67. GOLD. *Stater,* 0·6 inch. Weight 131·5 grains. Author. Plate XVIII, fig. 8. Duplicates, Mr. A. Grant and Author.

---

* Plutarch, in vita Demetrii.

Obv. Diademed head of king to right in bold relief. Duplicate very flat relief.

Rev. Head of Bukephalus to right, horned and bridled, with twisted forelock between the horns. In field ΔI. Inscription as on No. 66.

Nos. 68, 69, 70. SILVER. *Tetradrachmas,* 1·05 inch. Weights 258, 259, 261 grains. Author. See Plate XVIII, fig. 9.

Obv. Diademed head of the king to right. The head on the heaviest coin is younger, and of much finer execution than the others.

Rev. Horned and bridled head of Bukephalus, with three tufts of hair between the ears. In the field to right the letter Δ in a circle. Inscription as before.

Nos. 71, 72. SILVER. *Tetradrachmas,* 1·0 and 0·93 inch. Weights 256 and 260 grains. Author.

Types as on the last, but the head of Bukephalus much larger, and with only one tuft of hair between the ears. Monogram and inscription as before.

No. 73. SILVER. *Tetradrachma,* 1·00 inch. Weight 254 grains. Author. Duplicate, Mr. A. Grant. See Plate XVIII, fig. 10.

Types the same as on the last, but with the addition of the letters ΑΒΙΔ above the name of Antiochus. See Numismatic Chronicle, XX, Plate X, fig. 4, for Mr. Grant's coin.

Mr. Percy Gardner has suggested that ΑΒΙΔ may probably be "the beginning of the name of some Satrap, or semi-independent ruler of a district in Bactria, or the Paropamisus." The horned horse's head, he notes, is "a type belonging specially to those regions."

Nos 74, 75, 76. SILVER. *Drachmas,* 0·65 inch. Weight 65 grains. Author. Duplicates 64·5 and 63 grains.

Types exactly the same as the *Tetradrachmas,* Nos. 68 to 70.

Nos. 77, 78. SILVER. *Hemidrachmas,* 0·53 inch. Weight 31·5 grains. Author. Plate XVIII, fig. 12.

Types the same as the *Tetradrachmas,* Nos. 68 to 70.

No. 79. SILVER. *Drachma,* 0·65 inch. Weight 64 grains. Author. A remarkably fine coin, Plate XVIII, fig. 11.

Obv. Youthful head of king to right in bold relief.

Rev. Head of Bukephalus horned and bridled, with one tuft between horns. Inscription as on No. 66. No monogram.

No. 80. SILVER. *Tetradrachma,* 1·10 inch. Weight 253 grains. Author. Duplicate, 1·00 inch, 252 grains. Plate XVIII, figs. 14, 15.

Obv. Middle-aged head of king to right.

Rev. Apollo seated on Cortina with 2 arrows in right hand. Inscription as on No. 66. In the field to left the letter Δ in a circle.

Antiochus II.

No. 81. GOLD. *Stater*, 0·8 inch. Weight 129 grains. Author. Duplicate, Mr. A. Grant.

Obv. Diademed head of the king to the right.

Rev. Zeus naked, with aegis on his left arm, and thunderbolt in his upraised right hand, moving to left; his feet wide apart. In the field eagle and wreath. Inscription as on No. 66.

No. 82. GOLD. *Stater*, 0·75 inch. Weight 127 grains. Author.

Obv. Diademed head of king to right, somewhat smaller than on the last.

Rev. Zeus as on No. 81, but legs not so wide apart. In the field eagle with the letter N. Inscription as on No. 81.

No. 83. SILVER. *Tetradrachma*, 1·00 inch. Weight 257 grains. Author. Several Duplicates.

Obv. Diademed head of king to right.

Rev. Zeus combatting as on the gold coins. Eagle and monogram No. 29 of my list of Syrian monograms in Numismatic Chronicle. Inscription as on No. 81.

No. 84. SILVER. *Tetradrachma*, 1·05 inch. Weight 254 grains. Author.

Obv. Diademed head of king to right.

Rev. Zeus combatting as before. In the field an eagle with the letter N. Inscription as on No. 81.

No. 85. SILVER. *Drachma*, 0·7 inch. Weight 60 grains. Author. Both types as on No. 81.

No. 86. SILVER. *Drachma*, 0·7 inch. Weight 61 grains. Author. Both types as on No. 81, but instead of the wreath, a monogram forming the letters ΥΔ. Inscription as on No. 81.

Antiochus III.

No. 87. GOLD. *Stater*, 0·75. Weight 130 grains. Author. Duplicate, 130 grains.

Obv. Youthful diademed head of king.

Rev. Apollo seated on Cortina. Star above, and lyre in field below, monogram forming ΔΤ or ΔΙΤ. Inscription as on No. 66.

No. 88. GOLD. *Stater*, 0·72 inch. Weight 131 grains. Author.

Obv. Youthful laureated head of king to right.

Rev. Apollo seated on Cortina. In field to left Δ only. Inscription as before.

I am aware that these gold coins with the youthful face have been attributed to Antiochus Hierax by Mr. Percy Gardner. But I find it difficult to believe that any coins of Hierax, whose rule was confined to

Asia Minor, could have found their way to Bactria. I think also that the well known tetradrachmas with the hawk's wing over the ear belong to Hierax; and that he received his nickname of *Hierax*, or the "Hawk," from the wing on the coins, just as Alexander the Great received his title of *Dhulkarnain* or "Lord of Horns" from his portrait on the coins with the horn of Ammon. For these reasons I am inclined to assign the gold coins with the youthful portrait to Antiochus III. The occurrence of the monogram Δ on these coins is strongly in favour of this attribution, as it is found on so many others of the Oxus hoard, which are admittedly the mintage of the Eastern provinces, where the power of Hierax was unknown. On the other hand the coins with the hawk's wing seem to me te be from some of the well-known mints of Asia Minor where Hierax actually ruled. Thus the feeding horse, which occurs on all the hawks wing coins, is assigned by Müller to Alexandria in the Troad, while one of the British Museum coins with a double monogram is referred by Mr. Gardner himself to Alexandria in the Troad.* The other two British Museum coins I would refer to Metropolis or the Kayster. The first coin I should prefer giving to Magnesia on the Hermus. A fourth coin published by Leake was probably minted at Apameia on the Kibôtus.

Diodotus.

No. 89. Gold. *Stater*, 0·75 inch. Weight 131·5 grains. Author. Several duplicates.

Obv. Diademed head of king to right, very like the portrait on the coins of Antiochus II. of the same types. I agree with Mr. Gardner in thinking that both are the portraits of Diodotus.

Rev. Zeus combatting. To left eagle and wreath as on the coins of Antiochus II. Inscription ΒΑΣΙΛΕΩΣ ΔΙΟΔΟΤΟΥ.

No. 90. Gold. *Stater*, 0·70 inch. Weight 127 grains. Author.

Obv. Diademed head of king to right, different from the last.

Rev. Zeus combatting. To left eagle and wreath as before, but with a spear-head in the field to right. Inscription as on No. 89.

No. 91. Gold. *Stater*, 0·72 inch. Weight 128 grains. Author.

Obv. Diademed head of king to right, different face.

Rev. Zeus combatting. In the field to left an eagle and the letter N. Inscription as on No. 89.

No. 92. Gold. *Stater*, 0·73 inch. Weight 129 grains. Author.

Obv. Diademed head of king to right, like No. 89.

Rev. Zeus combatting. In field eagle and wreath with star above them. Inscription as on No. 89.

No. 93. Silver. *Tetradrachma*, 1·00 inch. Weight 259 grains. Author. Duplicate 259 grains.

---

* Seleucid kings of Syria, Antiochus II, No. 5 coin.

Obv. Diademed head of king to right.

Rev. Zeus combatting as on the gold coins, eagle at foot. Inscription as on No. 89.

No. 94. Silver *Drachma,* 0·65 inch. Weight 53 grains. Author. Both types as on No. 92.

No. 95. Silver *Tetradrachma,* 1·10 inch. Weight 259 grains. Author. Duplicate 249 grains.

Both types as on No. 92, but with the addition of wreath over the eagle.

No. 96. Silver. *Drachma,* 0·7 inch. Weight 61 grains. Author. Similar to No. 94. A duplicate, 62 grains, has a monogram forming ΠΥΡΗ with the letter Γ below.

No. 97. Silver. *Drachma,* 0·68 inch. Weight 61 grains. Author.

Obv. Diademed head of king to right.

Rev. Zeus combatting. In field eagle and crescent. Inscription as before.

Euthydemus.

No. 98. Gold. *Stater,* 0·70 inch. Weight 126 grains. Author. Duplicate 127 grains.

Obv. Diademed head of king to right.

Rev. Herakles seated on a rock with left hand placed on the rock, and right holding a club, which rests on a pile of three rocks in front. Elbow well raised above knee, and club pointed upwards clear of head. Monogram over top of club forming NIK.

No. 99. Gold. *Stater,* 0·65 inch. Weight 127 grains. Author. Duplicate 133 grains.

Obv. Diademed head of king to right.

Rev. Herakles as on the last, but rather smaller. Elbow almost touching thigh, and club resting on a pile of four rocks, with top pointed towards forehead.

Nos. 100, 101. Silver. Coins of Euthydemus of all the well known types. Several in good preservation; but many in very poor condition.

Here ends the list of all different varieties of coins that have come under my notice. Some of them are unique, and several are very rare, while many others are very common. The coins that I have seen amount to 64 gold and 459 silver, or altogether 523 specimens. But at least as many more must have been sold to Officers with the Army in Afghanishtân, so that the whole number found cannot have been less than 150 gold and 1000 or 1200 silver coins, mostly tetradrachms. The value of the coins alone would therefore have been about one talent or upwards, or 300£ sterling.

It is impossible to estimate the value of the ornaments and other relics found in the Oxus deposit, as so many of them were cut up on the spot, whilst many have found their way into other hands. It may be useful, however, to note that my own collection comprises 9,788 grains of gold relics and 34,075 grains of silver relics. The Chariot and Horseman belonging to Lord Lytton weigh 1,431 grains of gold. The par value of the relics that I have seen may be summed up as follows:

	GOLD.	SILVER.
Author, ...	1,223 Rs.....	190 Rs.
Lord Lytton, ...	180 Rs.	
Major Burton, ...	700 Rs.	
	2,103 Rs. +	190 Rs.
Total,........	2,293 Rs.	

If all the bracelets and collars now in my possession were complete, the actual value of the gold and silver would then exceed 2,500 Rs. But I have heard of a group of chariot and horses of 120£ intrinsic value which has lately been sold in England, and of a large silver horse and other relics, which would certainly raise the actual value of the ornaments and other relics to 5000 Rs. So that the whole treasure in relics and coins would have been worth 750£ at par.

Large finds of coins are not unknown in India. The following may be of interest to others besides coin collectors.

In 1842, near Coimbatore, 524 Roman gold coins were found, comprising 134 Augustus, 381 Tiberius, 3 Caligula, 5 Claudius. [Bombay Asiatic Society's Journal, I, 294.]

In 1851, 12 miles from Benares, 160 gold coins of the Gupta kings were found including 71 specimens of Chandra Gupta. [Bengal Asiatic Society's Journal, XXI, 390.]

In 1863 in Kúch Bihár, 13,500 old rupees of the Muhammadan kings of Bengal were dug up. [Royal Asiatic Society's Journal, N. S., II, 145.]

In 1871, in Agra, about 2000 heavy silver coins of Jahángír, 1¼ rupee each, were found in a heap of ruins outside the city.

In 1874, in Sonpat, about, 1200 hemidrachmas of the Greek kings of Kabul and the Panjáb were found in the bank of a tank. I have myself received upward of 900 of these coins, and have seen most of the others. They comprised specimens of eleven different kings; one half of the whole number belonging to Menander.

In 1875, at Pesháwar, about 1000 gold *dinárs* of the Indo-Scythian kings Wema Kadphises, Kanerki, Hoverki, and Bazo Deo were dug up in the city, out of which I have seen upwards of 600 specimens.

In 1878, at Sumerpur 12 miles from Hamirpur on the Jumna, 100 silver coins of the Greek kings of Kabul were discovered, comprising specimens of Eukratides, Antimachus, Apollodotus and Menander. Amongst them there were nine didrachmas of Menander.

A very interesting find was also made towards the end of the last century near Benares, as recorded in the following extract from " Nicholls' Recollections and Reflections", Vol. II, p. 203 [2 vols. 8vo. London, 1822]

" I was informed by the late Warren Hastings " that, while he was " Governor-General of Bengal, he sent as a present to the Directors of the " East India Company one hundred and seventy-two Darics. They had " been found buried in an earthen pot, on the bank of a river in the " province of Benares. Mr. Hastings told me that when he sent these " coins to the Court of Directors, he considered himself as making the " most munificent present to his masters that he might ever have in his " power to send them. Judge of his surprise when he found on his arrival " in England, that the Darics had been sent to the melting pot."

The same huckstering spirit clung to the Board of Directors until the last, when in a fit of economy they ordered all the gold and silver presents which they had received to be sold. Everything was sent to a silversmith to be valued, including the Græco-Bactrian silver plate with the procession of Bacchus which was presented to the East India Company by Dr. Lord. I have seen the valuation statement of the silversmith, and I was happy to find that this valuable Patera had been saved by Horace Hayman Wilson.

RELICS FROM SISTAN.

The bronze relics given in Plate XIX are also from Ancient Persia; but they come from *Sistán*, or Drangiana, and were collected by Capt. Hutton in the first Afghân campaign, from whom they came into my possession by purchase along with a small collection of coins.

These bronze objects are of two distinct kinds; ornaments and weapons. They are all given full size.

Fig. 1 is part of a bird including the head and wing and part of the back. As it is quite flat on the opposite side, I think it may have been part of an ornamental handle of a knife.

Figs. 2 and 3 seem to be portions of personal ornaments, as they have a strong resemblance to some of the gold bracelets given in Plate XVI.

Figs. 4 and 5 are female figures which I believe formed the handles of some unknown instruments.

Figs. 6 and 7 are flat-bladed arrow heads showing two different modes of attaching the head to the shaft.

Figs. 8, 9 and 10 are shouldered or barbed arrow heads.

Figs. 11 to 16 are three-edged arrow heads. They are all hollow, and each has a small hole on one side for fastening the head to the shaft by a cord. Similar arrow heads were found by Morier in the neighbourhood of Persepolis.*

Since this paper was written I have received the first number of Vol. I, of the 3rd Series of the Numismatic Chronicle, containing Mr. Percy Gardner's second notice of some "Coins from Central Asia," including the silver tetradrachma of Andragoras, of which I possess a duplicate. Mr. Gardner is inclined to think that the coins of king Lysimachus, of Tarsus, Sinope, Aspendus and Ephesus, were probably picked up by the collector on the road from the Oxus to India. This opinion is, however, directly opposed to the statements of the collectors themselves, as made to Mr. Grant in 1877-78, and as made to me yearly from 1878 up to the present time. In fact, I have received the impressions of many of these coins just as they were obtained on the Oxus, in letters from Khulm. So far as I have observed there are no western coins in the Oxus find of a later date than Alexander the Great, and as the soldiers of Alexander's army must have carried with them numerous coins from many different places in Greece, I would suggest this as a simple and reasonable explanation of their occurrence in this great deposit. The collectors separated without any hesitation all the coins obtained at other places. These comprised many specimens of Euthydemus, Eukratides and Heliokles, with one or two of Demetrius and a single coin of Agathokles. I have remarked that not a single Parthian coin has been found amongst the numbers that I have seen from the Oxus deposit.

POSTSCRIPT.

Since the above was put in type, I have received another small batch of coins from the Oxus. With these there were in addition 7 gold coins and 11 silver tetradrachmas, all of which were taken possession of by Abdul Rahman's Collector of Customs at Kabul. Amongst the gold coins there is said to have been one of Pharnaspes.

The following is a list of the coins that were brought to me, most of which have passed into my collection. Amongst them there are no coins of a later date than the time of Euthydemus and Antiochus the Great. The continued absence of any Parthian coins also points to a date preceding the reign of Mithridates I., whose coins are so common.

---

* See Rawlinson's Ancient Monarchies, III, 175, 2nd edit.

Silver Coins.

No.

2 Silver Darics (Sigli), very much worn.

1 Attic Tetradrachma—oblong—archaic type.

1 Philip of Macedon, large.

1 Alexander, Drachma, much worn.

1 Seleukus, Drachma, Elephant chariot.

1 Seleukus and Antiochus, tetradrachma, Elephant chariot.

1 Drachma—Elephant chariot—a beautifully perfect specimen, legend ΒΑΣΙΛΕΩΝ ΣΕΛΕΥΚΟΥ ΚΑΙ ΑΝΤΙΟΧΟΥ.

2 Antiochus I.—Tetradrachma—Horse's head.

2 Do. Drachmas do.

1 Do. Drachma—King's head with helmet and cheek-pieces—*Rev.* Victory and Trophy.

2 Do. Tetradrachmas—Seated Apollo.

Nickel.

1 Agathokles—usual type—ΦΙ in field.

Copper.

1 Antiochus I.—Helmeted head.

2 Do. Bad coins.

3 Diodotus—new type—Demeter in search of her daughter.

3 Euthydemus—usual types—Galloping Horse.

1 Pantaleon, square, usual types.

2 Agathokles, square, usual types.

4 Indian coins, square, Lion and Elephant.

Among these there are a few novelties, such as the helmeted Antiochus in silver, and the copper coins of Diodotus. But the gem of this small batch is the beautiful drachma of the "kings Seleukus and Antiochus."

Contributions on the Religion, History, &c. of Tibet.—*By* BABOO SARAT CHANDRA DÁS, *Deputy Inspector of Schools, Darjíling.*

I.—THE BON (PON) RELIGION.

INTRODUCTION.

Lama Je-tsun-lossañ CHHOIKYI-ÑIMA pal Ssañpo is the author of the well known work " Dub-thaḥ leg-shad śel-kyi mélon̂" which contains short accounts of the various religious systems in ancient India, Tibet, Mongolia and China.[1] The first Lama whose avowed incarnation he is believed to have been was named Chhoikyi wañ-chhyug, whose high dignity was recognised by the Emperor of China, by letters patent and the presentation of a golden tablet,[2] and who was famous for his knowledge of metaphysics and vyákaraṇa and did greatly enhance the cause of Buddhism. Our author was born, agreeably to a certain prophecy, at Pah-ri in Amdo, in the year *fire-serpent* of the 12th Cycle, *i. e.*, 1674 A. D., and died in the year 1740 A. D. In his boyhood he gave many striking proofs of his powerful intellect. Being a divine personage, he easily acquired proficiency in the several branches of Buddhist sacred literature. After taking the vows of monk-hood, he studied the Sûtras and Tantras under many eminent Lamas, such as Chañkya Rolpai Dorje the spiritual guide of the Emperor Kuenlang (Chhiñ-luñ). On his reaching the proper age he was placed at the head of the Jam-vyañ monastery on the Thí or throne of his predecessors. During his presidency more than 3000 monks used to congregate in the monastery for service. He visited Central Tibet, Tsañ and Sakya, and spent a few years at the Dapuñ monastery in order to prosecute religious studies. Returning to his native country, after a study of seven years, he displayed great learning in metaphysics and vyákaraṇa. At this time he propitiated the gods Hayagríva, Dorje Phagmo, and others of his tutelary deities. He also propitiated the goddess Paldan Lhamo (Kálí of the Hindús) who enabled him, it is said, to render good service to Buddhism. Many Mongolian princes and chiefs became his friends and spiritual pupils, by whose assistance he established five religious institutions. He resided in Pekin for more than three years, in order to collect information respecting the various schools of religion which then existed in China, and the ancient ones that had died away. He also carefully studied the national laws and statutes of China from ancient records, and thereby made himself famous. The Emperor conferred on him marks of honour and dignity greater than any that had been enjoyed by his predecessors. He also presented him his own robes, which contained one hundred and eight dragons worked in gold, together with a hundred thousand crowns of silver. The Mongolian princes also, who evinced great faith in his saintliness, made him immense presents. On his return to Amdo, all the chiefs and princes of Mongolia and western China advanced to a distance of six days' journey from the town to pay him homage. Among these princes, the Khan of Lanju and the Viceroy of Tsun̂-tu-fu were very well known. On his arrival at the monastery, the Lamas and monks of the thirteen great monasteries of Amdo made him presents, according to their means and resources. From that time, for a period of twelve years, he devoted himself to the affairs of the monastery and to yoga, after which he attained to the "marvellous state of the gods." At the age of 66, on the 10th of the Lunar month, his person being contracted to a cubit's length, he returned to the land of the blessed. He had finished his work called "Dub-thaḥ śelkyi mélon̂" about a week before his death, which occurred in 1740 A. D. The age of the work is therefore 140 years only.

---

[1] The Dub-thaḥ śelkyi Mélóñ (grub-*m*thaḥ śel-kyi mé-lóñ) contains 12 books. I have made a literal translation of the 8th and 11th books which treat of the Bon religion and the rise and progress of Buddhism in Mongolia. My translations of the 9th and 10th books (on Ancient and Mediæval China) are almost literal. All Tibetan names are spelt as pronounced, except those in the lists on pp. 199—201 which are spelt as written. In Bon the *b* is pronounced as *p* (Pon). The nasal consonants ང and ཉ are transliterated by *ṅ* and *ñ* respectively, and འ by *ḥ*, ཙ by *ts*, ཚ by *tsh*, ཛ by *ds*, ཞ by *sh*, ཟ by *ss*.

[2] In the history of Tibet and the lives of Lamas many accounts of presentation of seals and tablets will be found. The custom of presenting seals and tablets and letters patent is still in vogue in Tibet and China. The use of seals by different dependencies of China and Tibet is very carefully watched by the Government of those countries. A change of official seals generally signifies a change of vassalage. Tablets, like diplomas and letters patent, are given to establish a new ruler or governor in power.

The following are his principal works:

(1.) The Legendary biography of Lama Jam-vyan̂ of Gun̂-than̂, in 2 Vols.
(2.) " " " his predecessors, in one Vol.
(3.) Hymns and Songs.
(4.) On the worship of Hayagríva or "Taden," in 2 Vols.
(5.) " " Náro kha-choimo (a goddess), in 2 Vols.
(6.) " " Dorje Phagmo, in 2 Vols.
(7.) On Mathematics (Chronology, Arithmetic and Astrology), in one Vol.
(8.) On Medicines, in one Vol.
(9.) On the method of constructing chaityas, sacred pictures and images, in one Vol.
(10.) On rhetoric, words and versification; stotras in two Vols.
(11.) About the history and theories of the reformed, or Gelugpa, school, in 5 Vols.

TIBETAN TEXT.

8th Book of Dub-thaḥ Selkyi Meloṅ.

(གྲུབ་མཐའ་ཤེལ་གྱི་མེ་ལོང)

བོན་གཞུང་ལས། བསྐལ་པ་འདི་ལ་ཚེ་ལོ་དཔག་མེད་ནས་བཅུ་པའི་བར་དུ། སྟོན་པ་གཙོ་མཆོག་ཀུན་བཟང་ནས་ཐང་མ་མེ་སྟོན་གྱི་བར་བཅོ་བརྒྱད་འབྱུང་ཟེར་བས། དེའི་ནང་མཆོན་ཚེ་ལོ་བརྒྱ་པའི་དུས་སུ་འབྱུང་བར་བཤད་པའི་གཤེན་རབ་ནི་ད་ལྟའི་བོན་གྱི་སྟོན་པ་ཡིན་ལ། དེ་ཡང་ཞང་ཞུང་གི་ཡུལ་གྱི་འོལ་མོ་ལུང་རིང་དུ་གཤེན་རབ་མི་པོ་ཆེ་ཐ་བ་བྱུང་། དེ་འགའ་ཞིག་གིས་སངས་རྒྱས་ཀྱི་ནམ་འཕྲུལ་ཡིན་ཟེར་ཞིང་། བདག་ཅག་གི་སྟོན་པ་དང་དུས་མཚུངས་སུ་བྱུང་ཞེས་ཟེར་ཟེར། བཻཌཱུར་དཀར་པོ་ལས། ཞང་ཞུང་ཡུལ་ནི་བོན་འཆལ་བར། དགོངས་ཏེ་གཤེན་རབ་མི་བོར་སྤྲུལ། བོན་གྱི་མཛོད་པ་བཅུ་གཉིས་བསྒྲུངས། ཐེག་པ་རིམ་པ་དགུ་རུ་གསུངས། གསོན་པོ་རྣམས་ཀྱི་ལྷ་སྒོ་ཕྱེ། གཤིན་པོ་རྣམས་ཀྱི་དུར་སྒོ་བཅད། འགྲོ་རྣམས་གཡུང་དྲུང་ལམ་ལ་བཀོད། ཅེས་འབྱུང་ལ། གང་ལྟར་ཡང་མངོན་ཤེས་དང་རྫུ་འཕྲུལ་རྣམ་པ་སོགས་ཀྱི་ཡོན་ཏན་དང་ལྡན་པ་ཞིག་སྟེ། འོན་མདའ་གསེར་ཁང་སྟེ་ཞེས་ད་ལྟ་མདའ་རིས་སུ་ཚོང་ཚགས་པའི་གནས་འདི་དང་། ཏི་སེ་རཏི་ཆེན་སྒྲུངས་པ། ཀོང་ཡུལ་བྲ་རྒྱ་ལྷ་ཁང་གི་ཤར་ཕྱོགས་བོན་རིགས་སོགས་བོད་ཀྱི་གནས་ཙ་མར་འོངས་ནས་སྲིད་པའི་ལྷ་གཉན་མང་པོ་དམ་ལ་བཏགས་ཤིང་བཏུལ་བར་གྲགས། དེས་གཡུང་དྲུང་གི་ཆོས་ཕྱུང་སྒོ་བཞི་མཛོད་ལྔ་སོགས་བཤད། གཙང་འཆིང་བ་སྦུ་ཚེ་ལྡེམ་རྒྱུག ཁ་ཐིག་གི་མཁས་པ་སྦུ་ཚེ་ཏྲ་ཧེ་སེ། ཁྲི་ཐོག་བར་ཙམ། འབྲུ་འི་ཡི་ཐུར་མ། རྒྱ་གར་གྱི་མཁས་པ་ལྷ་བདག་སྣགས་རྡོ། རྒྱ་ནག་གི་མཁས་པ་ལེགས་ཏང་མང་པ། ཁྲོམ་གྱི་མཁས་པ་གསེར་དོག་ལྕེ་འཕྲམས། བོད་ཀྱི་མཁས་པ་ལྡེམ་རྒྱན་ཚེ་སྨངས། མི་ཉག་གི་མཁས་པ་ལྕེ་ཚེ་གར་བུ། སུམ་པའི་མཁས་པ་སྦུ་སྤུངས་གསང་ཏང་། ཞང་ཞུང་གི་མཁས་པ་ཤེར་བྱ་ཆེན་སོགས་རྗེས་འཇུག་མང་དུ་བྱུང་བས་བོན་ཆོས་ཕྱོགས་ཐམས་ཅད་དུ་འཕེལ་ཏེ་དར་བར་གྱུར་སོ། བོད་དུ་དར་བའི་བོན་ལ། རྡོལ་བོན། འཁྱར་བོན། བསྒྱུར་བོན་གསུམ་ལས། དང་པོ་ནི། གཉའ་ཁྲི་བཙན་པོ་ནས་རྒྱལ་རབས་དྲུག་པ་ཁྲི་སྡེ་བཙན་པོའི་དུས་སུ་དབུས་འམ་ཤེང་འོན་ཐ་བར་རྒྱས་གཤེན་ཡིན་པའི་ཕྱིས་པ་ལོ་བཅུ་གསུམ་ལོན་པ་ཅིག་འདྲེས་ལོ་བཅུ་གསུམ་གྱི་བར་དུ་བོད་ཁམས་

ཐམས་ཅད་དུ་ཁྲིད་ནས་ལོ་ཀི་ཤྭ་ར་རྒྱལ་ལ་མིའི་ནང་དུ་ཆུད་པ་ལ། མི་མ་ཡིན་གྱི་རྣམ་པས། ཡུལ་འདི་དང་འདི་ལྷ་སྲ་ན་ལྷ་འདེ་འདི་དང་འདི་ལྷ་སྲ་ཡོད་པས་ཕན་གནོད་འདི་དང་འདི་ལྷ་སྲ་བྱེད། དེ་ལ་གསོལ་མཆོད་དང་། ཡ་སྟག་གཏོང་ལུགས་འདི་འདྲ་བྱས་པས་ཕན་ཐེར་བ་སྣ་ཚོགས་ཤེས་པ་བྱུང་། རྒྱལ་རབས་རྣམས་སུ་གཉའ་ཁྲི་བཙན་པོ་ནས་ཁྲི་རྗེ་ཐོག་བཙན་བར་གྱི་རྒྱལ་རབས ཀི་ཤྭ་ར་རྒྱལ་ལ་ཆབ་སྲིད་བོན་གྱིས་བསྐྱངས་ཟེར་བ་ཙམ་ལས བཤད་སྣང་། བོད་ཡུལ་དུ་བོན་དར་བའི་ཐོག་མ་འདི་ནས་བྱུང་བར་མངོན། འོན་སྣང་དེ་དུས་ཀྱི་བོན་རྣམས་ལ་མར་འདེ་སྲིན་གནོན་པ་དང་། ཡར་ཀན་གྱི་ལྷ་མཆོད་པ་དང་། བར་ཁྱིམ་གྱི་ཐབ་འདོན་པ གསུཾ་ཙམ་ལས། བོན་ལུགས་ཀྱི་ལྟ་བ་སོགས་ཀྱི་ཐ་སྙད་མ་བྱུང་བས་ཆོས་འབྱུང་དང་རྒྱལ་རབས་འགའ་ཞིག་ཏུ་གྲི་གུམ་བཙན་པོའི་རིང་ནས་བོན་དར་བར་བཤད་དོ། དེ་ལ་རྒྱུའི་བོན་ཆབ་ནག་ཅེས་སྣང་གྲགས་སོ། གཉིས་པ་འཁྱར་བོན་ནི། རྒྱལ་པོ་གྲི་གུམ་བཙན་པོའི་གྲི་བཤེད་བོད་ཀྱི་བོན་པོ་རྣམས་ཀྱིས་བྱེད་མ་ཤེས་ནས། ཁ་ཆེ་དང་། འབྲུ་ཤ་དང་། ཞང་ཞུང་གསུམ་ནས་བོན་པོ་གསུམ་གྱི་བཤེད་ལ་བོས་པ་ལ། གཅིག་གིས་དགེ་གོད་ཕྱུང་དང་། མི་ལྷ་བསྒྲུབས་པ་ལ་བརྟེ་ནས། ཆ་ཞེན་ནས་ནམ་མཁའ་ལ་འགྲོ་བ་དང་། གཏེར་ཁ་ལེན་པ། བྱ་སྒྲོལ་ལྷགས་གཅོད་པ་སོགས་ཀྱི་རྣམ་པ་སྟོན། གཅིག་གིས་ཇུ་ཏིག་དང་། ལྷ་བཀའ་དང་། སོག་དམར་ལ་སོགས་པ་མོ་བཏབ་ནས་ལེགས་ཉེས་གཏན་ལ་འབེབས།

གཅིག་གིས་གཤིན་པོ་འདུལ་བ་དང་། ཤི་འདུལ་བ་ལ་སོགས་པ་བཤེད་ཀྱི་ཐེ་སྦག་རྣམས་ཤེས། དེ་གསུམ་མ་བྱུང་ཡན་ཆད་དུ་བོན་ལ་ལྟ་བ་འདི་ཡིན་བྱ་བ་མེད། དེ་ཕྱིན་ཆད་ནས་བོན་གྱི་ལྟ་བ་ཅིག་སྣང་བཟུང་སྟེ། མུ་སྟེགས་དབང་ཕྱུག་པའི་གྲུབ་མཐའ་འཁྱར་བ་བོན་དང་འདྲེས་པ་ཡིན་སྐད། གསུམ་པ་བསྒྱུར་བོན་ལ་གསུམ་ལས། དང་པོ་བསྒྱུར་བ་ནི། པཎྜིཏ་ཤམ་ཐབས་སྟོན་པོ་ཅན་གྱིས་ཆོས་ལོག་གཏེར་དུ་བཅུག་ནས་ཁོ་རང་གིས་བཏོན པ་བོན་དང་འདྲེས་པ་ལ་ཟེར། གཉིས་པ་བར་དུ་བསྒྱུར་བ་ནི། ཁྲི་སྲོང་ལྡེ་བཙན་གྱི་དུས་བོན་རྣམས་ཆོས་ལ་འཇུག་དགོས་པའི་བཀའ་ཁྲིམས་བྱས་ཏེ། རྒྱལ་བའི་བྱང་ཆུབ་ཟེར་བ་ལ། རིན་ཆེན་མཆོག་ལ་ཆོས་དོན་བྱས་པས་ཁོས་མ་འདོད་པ་ལ། རྒྱལ་པོའི་ཁྲིམས་བཅད་པས་ཁོ་ཁྲོས་ཏེ་བོན་དང་བསྲེབས་ནས་སངས་རྒྱས་ཀྱི་གསུང་རབ་འགའ་ཞིག་བོན་དུ་བསྒྱུར། དེ་རྒྱལ་པོས་གསན་ནས། དེ་བཞིན་གཤེགས་པའི་གསུང་རབ་བོན་དུ་བསྒྱུར་བ་རྣམས་ཀྱི་སྔོ་ཚོད་གསུངས་ནས་མང་རབས་

ཕྱི་སྣེ་བཅད་པས། བོན་ཉམས་སྨྲག་ནས་བསྒྱུར་འཕྲོ་དང་བཅས་པ་གཏར་ཙ་ཐུས་པ་ཉམས་ཕྱིས་སུ་བཏེན་པ་ལ་བོན་གཏེར་མ་ཡིན་ཟེར། གསུམ་པ་ཐ་མར་བསྒྱུར་པ་ནི། གླང་དར་ཕྱིས་བསྟན་པ་བསྣུབས་རྗེས། གཙང་ཤང་སྟོད་ན་གཤེན་རྒྱུར་བླ་དགའ་ཐུ་བས། དར་ཡུལ་སྒྲོ་ལག་ཐ་བ་དབུས་ཕྱི་བོན་གནས་ཅིག་ཏུ་སངས་རྒྱས་ཀྱི་བཀའ་མང་པོ་བོན་དུ་བསྒྱུར་ཏེ། ཡུམ་རྒྱས་པ་ལ་ཁམ་ཆེན། ཉི་ཤུ་ལྔ་པ་ལ་ཁམ་ཆུང་། གཏན་ལ་དབབ་པ ལ་བོན་མདོ། གཟུངས་སྡེ་ལྔ་ལ་ཀླུ་འབུམ་དཀར་ནག་ཅེས་བཏགས། བཀའ་ཆད་དང་བརྗོད་བྱ་ཆོས་དང་མི་འདྲ་བ་སྣ་ཚོགས་བྱས་ཏེ། མཚོ་ལྔ་འཛིན་ཆུང་གི་བྲག་ལ་གཏེར་དུ་སྦས། ཕྱིས་སུ་ཁྲོ་རང་གིས་ཐོན་པ་ལྟར་བྱས་བཏོན། དེ་རྗེས་ཁྱུང་པོ་བོན་ཞིག་ལ་སོགས་པས་ཀྱང་དེ་འདྲ་མང་དུ་བསྒྱུར། བསྒྱུར་བོན་སྔ་ཕྱི་བར་གསུམ་པོ་དེ་ལ་ཆབ་དཀར་ཟེར་ཏེ་འབྲས་བུའི་བོན་ཅེས་མིང་བཏགས་སོ། བོན་ཕྱི་ཆོས་ལ་བཀའ་འགྱུར་ཐེང་གི་ཚིག་ཡོད་ཅིང་། ལྟ་བ་སྟོན་པའི་གཞུང་། རྫོགས་པ་རིན་ཆེན་གསེར་གྱི་འཕྲེང་བ། རྩ་འགྲེལ་སྒྲོན་གྱི་སྒྲ་ཐུ། མན་ངག་འཁོར་ལོ་འོད་གསལ་སོགས་དང་། སྒོམ་པའི་གཞུང་། སྤང་པོ་རང་འགྱུར་ཐིག་ལེ་དྲུ་སྐོར། གསེར་ཐིག། ལུས་སེམས་ཉམས་སྦྱོང་། སེམས་ལུང་ཡི་ཁྲི་དཀར་པོ་སོགས་དང་། སྤྱོད་པའི་སྐོར་ལ། ཁམས་བརྒྱད་གཏན་ལ་ཕབ་པའི་འབུམ། ཡོ་གཞིན་བཀོད་པ་དོན་ཕྱི་འབུམ། གཡུང་དྲུང་ས་བརྒྱ་ལམ་གྱི་འབུམ། ཉམ་དག་རྒྱལ་ཁྲིམས་འཆལ་བའི་འབུམ། དགེ་རྒྱས་ཚོགས་ཆེན་རྫོགས་པའི་འབུམ། གཞན་ཡང་ནད་འབུམ་ནག་པོ། ཚེ་འབུམ་ཁྲ་པོ། སྨན་འབུམ་དཀར་པོ། གཏོ་འབུམ་ནག་པོ་སོགས་དང་། འཕྲིན་ལས་ཀྱི་སྐོར་ལ། གཏོ་ཐབས་སུམ་བརྒྱ་དྲུག་ཅུ། དཔྱད་ཐབས་བརྒྱད་ཁྲི་བཞི་སྟོང་། སྲིར་གནོན་བཞི། ཤད་ཅང་བརྒྱད། ཤི་ཐབས་སུམ་བརྒྱ་དྲུག་ཅུ། འཆལ་ཐབས་བརྒྱད་ཅུ་རྩ་གཅིག་སོགས་ཏེ་དེ་ལ་ཆབ་ནག་སྲིད་པ་རྒྱུད་ཀྱི་བོན་ཟེར། བསྐྱེད་རྫོགས་འབྲས་བུའི་སྐོར་ལ། སྤྱི་སྤུངས་བོན་མཛོད། ཕ་རྒྱུད་དྲག་པོ་དབྱི་འཆུས། མ་རྒྱུད་ཉི་མ་དབྱི་ཤར། ཁྲི་རྒྱུད་མདོ་ཆེན་འཁྲམས་པ་སོགས་ཏེ་དེ་ལ་ཆབ་དཀར་སྔགས་ཀྱི་བོན་ཅེས་ཟེར། སྤྱང་མའི་སྐོར་ལ། སྤྲག་གི་སག་བཀར་ཆེ་ཆུང་། ཞ་བ་སྤྱ་གི་དམར་ནག། དལ་འབྲུམས་མ་མོའི་ཁྲག་སྦུབ་སོགས་དང་། ཤོ་ག་བཅད། རྒྱལ་པོ། བཙན། དམུ། ཀླུ། གཟའ། དབང་ཕྱུག་སོགས་ཀྱི་སྒྲུབ་སྐོར་དང་། རྫོལ་སོད་འཁོར་ལོ་དགུ་སྐོར། གཏང་ཕྱི་སྐོར། ར་ཐུ ཤག་པ་སྦྲང་རྒྱག་ཐན་ཕྱི་སྐོར་སོགས་ཡོད་ཅས

ཟེར་རོ། གཞུང་དེ་དག་ཏུ། མི་རྟག་པ་དང་། ལས་འབྲས། བྱམས་སྙིང་རྗེ་བྱང་ཆུབ་ཀྱི་སེམས། ཕྱིན་དྲུག་སོགས་ཀྱི་གཏེ་ཐར་ཐོར་དང་། ལམ་ལྔ་ས་བཅུ། སྐུ་གསུམ་སོགས་ཀྱི་རྣམ་བཞག་ཅུང་ཟད། དབང་བསྐྱེད་རྫོགས། དམ་རྫས། རབ་གནས། སྦྱིན་སྲེག དཀྱིལ་འཁོར་སྒྲུབ་མཆོད། གཤིན་ཆོག་སོགས་ཀྱི་དོན་དང་ལས་ཁ་ཚོར་བ་མང་། བཤད་ཚུལ་སངས་རྒྱས་ཀྱི་ཆོས་དང་དཔེབས་མཐུན་པ་དང་མི་མཐུན་པ་ཅི་རིགས་དང་། སངས་རྒྱས་ལ་ཡེ་གཤེན་ཏེ་ཐལ། ཆོས་སྐུ་ལ་བོན་སྐུ། ཡུམ་ཆེན་མོ་ལ་ས་ཏྲི་ཨེ་སངས་། ལོངས་སྐུ་ལ་ཀུན་ཏུ་བཟང་པོ། སྤྲུལ་སྐུ་ལ་སྲིད་པ་སངས་པོ། དགྲ་བཅོམ་ལ་གཤེན་ཐུས། བྱང་སེམས་ལ་གཡུང་དྲུང་སེམས་དཔའ། བླ་མ་ལ་དཔོན་གསས་། སྟོང་ཉིད་ལ་འ་མི་ཉིད། ས་བཅུ་ལ་ཐི་མེད་ཤེལ་གྱི་ས། འོད་ཟེར་འཕྲོ་བ་རིག་འཛིན་སྤྲིན་སྤུང་གི་ས། ཕྱག་རྒྱ་བསྒྱུར་བའི་ས་སོགས་ཀྱི་མིང་བཏགས་པས་མཚོན། བར་ཆད་དང་མིང་འདོགས་སྒྲ་འདོད་ཚུལ་བ་མང་ཙ་སྣང་། ལྷ་སྒོམ་སོགས་ཀྱི་འདོད་ཚུལ་ལ། ཕྱིར་བོན་ལ་ཕྱི་བོན་དང་ནང་བོན་གཉིས་ཡོད་པར་གྲགས་ཤིང་། བོན་གཞུང་འགའ་ཞིག་ཏུ། དང་པོ་ཡེ་མེད་སྟོང་པ་ལ། དེ་ནས་ཡེ་ཡོད་ཆུང་ཟད་སྲིད། དེ་ནས་བ་མོ་སྣ་ཚོམ་སྲིད་། དེ་ནས་ཟིལ་བ་ཁྱུམ་ཚོམ་སྲིད། ཅེས་སོགས་ཟེར་ནས། མཐར་སྣོད་བཅུད་ཐམས་ཅད་སྣང་ལས་སྐྱེས་པའི་ལུགས་དང་། སྲུ་དང་དབང་ཕྱུག་སོགས་ཀྱིས་བྱས་པའི་ལུགས་སུ་སྣང་བ་ནམས། མུ་སྟེགས་ཀྱི་ལྟ་བ་འཁྱར་བ་ཡིན་ཅེས་འབྲི་གུང་འཇིག་རྟེན་མགོན་པོས་གསུངས་ཤིང་། དེང་སང་ཀུན་ལ་དར་ཆེ་བའི་གཏོ་ཆོག་རྣམས་སུ་ཡང་བོན་གྱི་ཚིག་དེ་འདྲ་བ་མང་པོ་སྣང་ངོ་། །ཡང་བོན་གཞུང་འདུས་པ་རིན་པོ་ཆེའི་རྒྱུད་ཐ་མ་ན། ཀུན་རྫོབ་ཏུ་ནི་དངོས་རྣམས་ཞེན་པས་ཡོད། དམ་པའི་དོན་ཏུ་ཆགས་པ་སྤངས་པས་མེད། གཉིས་ཀ་སེམས་ཀྱི་ཆས་ཟིན་མ་ཆགས་མ་ཡེངས་པས། སྟོང་པ་ཉིད་ཀྱི་ཡེ་ཤེས་ཞེས་བྱ། མི་རྟོག་ཡེངས་མེད་ཁྱབ་གསལ་དངས་ན། སྒོམ་པའི་དངོས་པོ་དེ་ཉིད་ཡིན། དེ་ལྟར་ལྟ་སྒོམ། གཉིས་ཀ་འབྲེལ་བར་སྤྱོད་ན། སྤྱི་བ་འདི་ལ་ཐར་པའི་འབྲས་བུ་ཐོབ་པར་ངེས། ཞེས་སོགས་ཀྱི་བཤད་ཚུལ་ནི། བཀའ་དང་བསྟན་བཅོས་ནས་བཤད་པ་དང་དོན་འདྲ་བར་སྣང་ཞེས་སྤྱན་སྔ་བློ་གྲོས་རྒྱལ་མཚན་གྱིས་གསུངས། ཡང་ཀུན་མཁྱེན་ཤེར་འོད་དང་། སྟག་ཚང་ལོ་ཙཱ་བས་བོན་གྱི་ཐེག་པ་དགུ་རིམ་པ་རྙིང་མའི་རྫོགས་ཆེན་དང་མཐུན་པར་ཡང་བཤད་དོ། ཁོ་བོས་མཐོང་བའི་བོན་གཞུང་ཞིག་ན་འདི་ལྟར་སྣང་སྟེ། གཞི་རང་བཞིན་

ནམ་དག་གི་གནས་ལུགས་ནི། སངས་རྒྱས་སེམས་ཅན་གཉིས་ཀའི་སྔོན་རོལ་ན། འོད་གསལ་སྟོང་པ་བོན་གྱི་སྐུ་ངོ་བོ་རང་བཞིན་ནམ་དག། བག་ཆགས་སྒྲིབ་པས་མ་གོས་ཤིང་། ཅི་ཡང་མ་ཡིན་ལ་ཅི་ཡང་གསལ་བ། གདོད་ནས་སངས་རྒྱས་ངོ་བོར་གནས་པ། སྤྲ་བའི་རྒྱུ་ལས་མ་གྲུབ། བྱེད་པའི་རྐྱེན་ལས་མ་སྟོས་པར་རྩོལ་མེད་ལྷུན་གྲུབ་རང་ཆས་སུ་ཡོད་དེ། དེ་རྟོགས་པས་བཟང་ཏུ་མ་སོང་། མ་རྟོགས་པས་ངན་ཏུ་མ་སོང་བས། སངས་རྒྱས་དང་སེམས་ཅན་ལ་ཡོད་པ་དེ་གཉིས་ལ་བཟང་ངན་མེད། ཀུན་ལ་ཁྱབ་གདལ་ཆེན་པོར་ཡོད་པ་ནི་གཞིའི་གནས་ལུགས་ཏེ། དེ་ལས་འཁོར་འདས་ཐམས་ཅད་ལྷུན་གྱིས་འགྲུབ་ཅིང་། ཆོས་ཐམས་ཅད་དེའི་ངང་ཏུ་གནས་སོ། དེ་ཉིད་ཀྱི་རྩལ་འགག་མེད་ཏུ་འཆར་ཏེ། རྟོགས་ན་ཡེ་ཤེས་སུ་འཆར། མ་རྟོགས་ན་ལས་དང་ཉོན་མོངས་སུ་འཆར་། དེའི་དོན་ཅིར་ཆོད་ནས་མངོན་ཏུ་གྱུར་ན་གཞི་ཡེ་གནས་ཀྱི་གནས་ལུགས་རྟོགས་པ་ཡིན་ལ། དེ་རྟོག་ན་ཡང་རྒྱུད་ལ་རང་ཆས་སུ་འཆར་བ་སྟེ། དེ་ཤར་ན་ས་འབྲས་བུ་སྐུ་གསུམ་མངོན་གྱུར་ཏུ་ཐོབ་པོ། གནས་ལུགས་དེའི་ངོ་བོ་མ་གྲུབ་རྗེན་པར་ས་ལེ་གསལ་བ། རིག་པ་རྟོག་དཔྱོད་གཡོ་རྩོལ་གྱིས་མ་གོས་པའི་གཅེར་བུ་ལ་ཡེ་ཤེས་སུ་ཤར་ཏེ་། དེའི་ཚེ་ངན་མེད་ཏུ་ཀད་དེ། གཏད་མེད་ཏུ་སྤྱོད་དེ། རྟོག་མེད་ཏུ་རྗེན་ནེ། འཛིན་མེད་ཏུ་ཞིག་གི་བདེ་ལ་རང་བྱུང་རིག་པའི་ཡེ་ཤེས་ཞེས་བྱ། དེ་ལ་ཅེར་གྱིས་ལྟ་བ་ཞེས་བྱའོ། སྒོམ་པ་ནི། སྙིང་རིན་ཆེན་གཞལ་ཡས་ཁང་རྩ་འདབ་བརྒྱད་ཏུ་གནས་པའི་དཀྱིལ་ན་དྭངས་མ་ལྔ། དེའི་དཀྱིལ་ན་ཡེ་ཤེས་ལྔ་ཆེན་གྱི་སྐུ་རྒྱ་བརྡོག་པ་འདྲ་བ། དེའི་དཀྱིལ་ན་བོན་སྐུ་འོད་ཀྱི་གོང་བུ་གནས་ཏེ། དེ་ནི་ངོ་བོ་སྟོང་པས་རྟག་པར་མ་སོང་། རིག་ཅིང་གསལ་བས་ཆད་པར་མ་སོང་། ཅི་ལྟ་བུར་ཡང་དམིགས་སུ་མེད་པ། དེའི་རྩལ་སྒྲ་འོད་ཟེར་གསུམ་ལ། སྒོ་གསུམ་ཚོགས་དྲུག་ཡུལ་དྲུག་འགག་མེད་ཏུ་འཆར་། དེའི་ངོ་བོ་ལ་ལྟ་བ་ལྟ་མཁན་གཉིས་མེད་ཏུ་ཅེར་གྱིས་བལྟས་པས།

སྣང་གིས་ཤར་བ་ལ་ཡོངས་མེད་འཛལ་མེད་ཏུ་འཇོག་པ་ནི་སྒོམ་པ་ཡིན་ཟེར་། དཔེ་ན། ཐུན་སྒམ། དང་སྒོམ། སྤྱོད་སྒོམ་གསུམ་གྱི་དང་པོ་ནི་ངོ་འཕྲོད་ནས་ཐུངས་དང་མཐུན་ཏུ་བཅད་ནས་སྒོམ་པ་སྟེ། དང་པོ་གནས་པ་བྱུང་། བར་ཏུ་ཆ་མཉམ། མཐར་ཏིང་ངེ་འཛིན་གྱི་ངང་ཏུ་ཞིལ་གྱིས་འགྲོ། དེ་ཡང་བཞག་ན་སྐྱོད། བཏང་ན་འགྲོ། བཟུང་ན་ཟིན། དགོས་ཏུས་སྐྱེབས་ན་ཐུན་སྒོམ་ཆད་ཏུ་འཆོལ་བ་ཡིན། གཉིས་པ་ནི་སྐབས་ཤིག་སྣང་བ་རང་གྲོལ་གྱི་ཉམས་འཆར། ཏིང་ངེ་འཛིན་ལ་འཅུ་འཕལ་མེད་པས

སྒོམ་མེད་དང་ཡེངས་མེད་ཙ་གནས་པ་བྱུང་ན་དང་སྒོམ་ཚད་ཙ་འཁྲོལ་བ་ཡིན། གསུམ་པ་ནི། དེ་ལྟ་བུའི་རིག་པ་དེ་ཉམས་སུ་བླངས་པས་དོན་མངོན་ཙ་གྱུར་ཏེ་བསྒོམ་བྱེད་ལས་འདས་པ་ནམ་མཁའི་ངོ་བོ་ལྟ་བུ་འཛིན་རྟོག་བྲལ་ལས་འདས་པ་ཅིག་འབྱུང་། དེ་ཙ་ན་ཉོན་མོངས་ཐམས་ཅད་ཡེ་ཤེས་སུ་འཆར་། སྣང་བ་ཐམས་ཅད་བོན་དབྱིངས་ནམ་དག་ཙ་རྟོགས་ཏེ། འཁོར་འདས་བཟང་ངན། སྤང་བླང་། དབྱེར་མེད་རོ་གཅིག་པར་གྱུར་ནས བོན་སྐུ་རང་ས་ཟིན་པས་གྲོང་སྒོམ་ཟད་པར་སྨིལ་བའོ། ཞེས་བྱུང་ངོ་། འདི་དག་ནི་ཕྱིས་ཀྱི་རྫོགས་ཆེན་པས་ཟེར་ལུགས་དང་དཔེ་བས་མཚུངས་པ་འདུག་པས། བོན་རྫོགས་གཉིས་ཁྱུགས་ནད་གཤིན་པོ་ཡོད་འདྲའོ། ཐེག་པ་རིམ་པ་དགུས་བོན་གྱི་གཞུང་བཤད་ཟེར་ཏེ། དབུ་ནི། ཕྱྭ་གཤེན། སྣང་གཤེན། འཕྲུལ་གཤེན། སྲིད་གཤེན་ཏེ་རྒྱུའི་ཐེག་པ་བཞི། དགེ་བསྙེན། ཨ་དཀར་དྲང་སྲོང་། ཡེ་གཤེན་ཏེ་འབྲས་བུའི་ཐེག་པ་བཞི། ཁྱད་པར་ཆེན་པོའི་ཐེག་པ་གཅིག་སྟེ་དགུའོ། །ཕྱྭ་གཤེན་ལ་གཏོ་སུམ་བརྒྱ་དྲུག་ཅུ། དཔྱད་བརྗེད་ཁྲི་བཞི་སྟོང་། སྣང་གཤེན་ལ་གཏེར་སྒྲུམ་བ་བཞི། སྐད་ཅོད་བརྒྱད། གཏའ་རག་བའི་བརྩ་ཕ་གཉིས། འཕྲུལ་གཤེན་ལ་ལྟ་བྱད་ཐུ་འཕྲུལ་གྱི་གཞུང་། སྲིད་གཤེན་ལ། ཤི་ཐབས་སུམ་བརྒྱ་དྲུག་ཅུ། འདུར་སྣ་བཞི། འཙལ་ཐབས་བརྒྱད་རྩ་སྒ་གཅིག།

དགེ་བསྙེན་ལ.ལྔོད་བརྩད་འབྱུང་རྫོགས་ཀྱི་མདོ་སྡེ་སོགས.དང་། དྲང་སྲོང་ལ་འབུམ་སྡེ་སྡེ་བཞི་སོགས་དང་། ཨ་དཀར་ལ་རྒྱུད་ཕྱུང་ཙ་མ་དང་། ཡེ་གཤེན་ལ་སེམས་ཕྱུང་སྡེ་བཞི་དང་། ཁྱད་པར་བ་ལ་མན་ངག་སྡེ་ལྔ་ཡོད་ཟེར། རྒྱུ་བོན་བཞིས་གཟུང་འཛིན་གྱི་རྟོག་པ་ཆ་བཞི་སྤོང་། དགེ་བསྙེན་དྲང་སྲོང་གཉིས་ཀྱིས་ཉོན་སྒྲིབ་སྤོང་། ཨ་དཀར་ཡེ་གཤེན་གཉིས་ཀྱིས་ཤེས་སྒྲིབ་སྤོང་། ཁྱད་པར་ཆེན་པོས་ལྷན་སྐྱེས་ཅད་ནས་གཅོད། ཡང་རྒྱུའི་བོན་བཞིས་བསྐལ་པ་ཙ་མར་སྦྱངས་པས་མོས་སྤྱོད་ཚོགས་པའི་ཐོབ། དགེ་བསྙེན་དང་དྲང་སྲོང་ཚིས་བསྐལ་པ་གྲངས་མེད་གསུམ་ལ་ལམ་བ་སྦྱོད་ནས་ཐར་བ་ཐོབ། ཨ་དཀར་ཡེ་གཤེན་ཚིས་སྐྱེ་བ་གཅིག་ལ་མཐར-བ་ཐོབ; ཁྱད་པར་ཆེན་པོས་ཚེ་གཅིག་གིས་བོན་སྐུ་ཐོབ་ཅེས་བཤད་དོ། བོན་རྗེ་ལྷར.དར་བ་དང་འདོད་རྩོལ་ནམས་ཞིབ་ཏུ་བཤད་པའི་གཞུང་མ་རྙེད་པས། བོད་ཙ་སྔ་ཕྱི་བར་གསུམ་ཙ་འབྱུང་རྩོལ་ནམས་འབྲི་གུང་དགོངས་གཅིག་ལས་གསུངས་པ་ལྟར་དང་། ལྟ་སྒོམ་དང་རྟོག་པ་སོགས་ཀྱི་འདོད་རྩོལ། ཡུལ་མང་མཁར་གསང་བའི་བོན་སྟག་ཙ། སྟག་

གཟིག། རྒྱ་དཀར་ནག་བོད་ལ་སོགས་པའི་རིག་འཛིན་མཁས་པ་མཐའ་ག་འཛམས་ནས། བོན་ཀྱི་སྐ་མོ་བཅུད་ཁྲི་བཞི་སྟོང་ལས་བསྡུས་པའི་གསང་སྔགས་རྫོང་འཕྲང་གི་འོད་རྒྱན་ཁྲ་བ་ལས་འབྱུང་བ་ལྟར་བྲིས་སོ། བོན་གྱི་དགོན་སྡེ། བོད་ན་གཤེན་དར་སྡིང་དང་རྒྱལ་མོ་རོང་ཙ་གཡུང་དྲུང་ལྷ་སྡིང་སོགས་ཡོད་པ་ཙམ་ཕྱིས་རྒྱ་ནག་གོང་མའི་དམག་གིས་བཤིག་ནས་ལྷ་སྡིང་ཙ་དགའ་ལྡན་ཐུ་བའི་དགེ་ལུགས་པའི་དོན། སར་འཇུག་པ་མཛད། བོན་ལུགས་མི་ཆོག་པའི་བཀའ་ཡམ་ཙམ་ཞིག་བསྒྲགས་ན་འདང་། ད་དུང་རྒྱལ་རོང་དང་ཚོ་ཁ་སོགས་ན་བོན.ཆེ.མང་ཙམ་ཡོད་པ་སྣང་ངོ་།

TRANSLATION.

In Bon *Granthas* it is said that in the present Kalpa, from the time when the duration of human life was immeasureable till it dwindled to ten years, there are eighteen divine manifestations (teachers), counting from Kun-tu-ssañ-po, the chief Bon god, to Thañ-ma-medon. Of these teachers, the one who is called S'en-rab and is said to have appeared when the length of human life diminished to one hundred years, is the reigning Bon god. He was born at Ḥolmo Luñriñ (or "long valley"), in the country of Shañ-shuñ.[3] Some authors conjecture that he, being a miraculous incarnation of Buddha, was contemporaneous with our teacher (S'ákya Siṃha).

According to the Vaidúrya Karpo,[4] Buddha, with a view to the moral improvement of the Bonpo, became incarnate as S'en-rab-mipo[5] in the country of Shañ-shuñ. He observed the twelve acts of the Bon Dharma and taught the nine series of *yánas* (vehicles of knowledge), opened the door of the gods (heaven) for those alive, and shut the entrance of the graves of the dead, and committed the living to the path of *svastika* (yuñ-druñ).[6] He possessed such powers as foreknowledge, and was able to perform miracles, &c. Moreover having visited various places of Bon pilgrimage in Tibet on the east of the monastery of Pu-chhu-lha-khañ in Koñ-yul, Ñaḥ-ser-khañ-tse on the site of which was established the monastery of Ñaḥ-ri-tva-tshañ, the hill called Rin-chhen puñ-pa, &c., he subdued many earthly demons and evil spirits, all of whom he bound under solemn oaths. He explained the four ways of Bon *svastiḳa* and *skandha* and the five repositories of sacred scriptures. Among his spiritual descendants, there were the six who bore the surname of Mu-tsho and Dem, the Persian sage named Mu-tsho-tra-hé-si, The-thoñ-par-tsam, Guhi-li-barma, the Indian Pandit Deva Nátha surnamed Mantra-ushma, the Chinese sage Leg-tañ-mañ, the learned priest of Thom named Ser-dog-che-chyam, the Tibetan sage Dem-gyen-tsha-mañ, Che tshagargu the learned scholar of Mi-ñag (Burmah), the erudite Mupañ-sañ of the Sumpa country, and the sage S'er-pu-chhen of Shañ-shuñ; these and many other followers, carrying the doctrine to all quarters, diffused the Bon religion.

---

[3] Shañ-shuñ is the part of Tibet, called now Gugé and Knáor or upper Besahr.

[4] Vaidúrya Karpo, meaning the White Lapis Lazuli, is the name of a historical and chronological work of great repute, composed by the illustrious Regent of Lhasa, Desi Sañgé, in the 17th century.

[5] The word *Sen* means god, *rab* means excellent, hence *Sen rab* means excellent god; *Mipo*, human.

[6] The Svastika emblem of the Bonpo is similar to that of the Buddhists, from which it only differs in direction; for *Bon-kor* or the Bonpo manner of circumambulation round a shrine or deity is from right to left, while the Chhoi-kor or the Buddhist manner of circumambulation is from left to right. The Bon religion is founded on the Svastika *maṇḍala* which is called "Yuñ-druñ."

In Tibet the Bon religion presented itself as 1st, Jola-Bon; 2nd, Khyar-Bon; 3rd, Gyur-Bon.

1st stage Jola Bon.

During the reign of king Thi-de-tsanpo, the sixth in descent from Ñaḥ thi-tsanpo, in the province of U, also called Shoñ-hon, a boy belonging to the family of S'en, at the age of thirteen, was kidnapped by a goblin, who took him to different places and mountains of Tibet and Kham. After rambling thirteen years with the goblin, the boy, fully instructed in demoniac crafts, being now twenty-six years of age, was returned to the society of men. He could point out the haunts of malicious spirits and goblins, and tell that such and such a demigod and demon lived in such and such a place, who committed mischief and good of this and that kind, and that they could be propitiated by a certain kind of worship and offering. He gave an account of different descriptions of "*ye-tag*" or mystical offerings.[7] Twenty generations of Tibetan kings, from Ñaḥ-thi-tsanpo down to Thi-jé-tsanpo, are said to have followed no other religion than the Bon. It is evident that the first introduction of the Bon religion in Tibet was due to this man. However, the Bonpo of that age were skilled in witchcraft, the performance of mystical rites for suppressing evil spirits and cannibal hobgoblins of the nether region, the invocation of the venerable gods above, and the domestic ceremonies to appease the wrath of malignant spirits of the middle region (Earth) caused by the "pollution of the hearth."[8] Besides these there did not then exist any other theories or works concerning the Bon religion. In (some historical works such as) the Gyalrab and Chhoi-juñ

---

[7] They are prepared, like the masts of a ship, with stretched threads and ropes.

[8] *Thab-den* or "the ejecting of defilement from the hearth." In Tibet and its neighbourhood from time immemorial the defiling of the hearth by the overflowing of boiled milk, broth of meat, or of any other thing edible or useful (except water) from any utensil, is considered to be a great calamity which brings immense trouble to

---

the owner. When a cook-house containing a hearth is so defiled, the owner must immediately cleanse it out; the ground which held the hearth should be dug out and thrown into water, in default of which the demons and the gods of the middle region, "Sa-dag" (or Nágas), become annoyed and punish the owners or defilers with the disease of leprosy. In order to escape such punishment, that is, to be cured of leprosy, the patient goes to a male or female Bon priest in quest of a remedy. He requests him or her to examine his fortune; the priest of course attributes the disease to defiling of the hearth, and requests the patient to recollect the places where he ever cooked food or boiled anything. The names of all those places being given, the priest casts lots and finds out the right place and arranges for the ceremonies of cleansing the defiled hearth. Not all priests can claim to perform the ceremony, but the patient invites the priests of the country who assemble in an open place and cast lots to find out what particular priest would be acceptable to the "Sa-dag" for the purpose of officiating at the ceremony. The fortunate man being picked out, the service commences. He strictly abstains from the use of spirits and meat for the time being, as the "Sa-dag" are prejudiced against their use. The priest now invokes his tutelary deity called Kah-bab, and Thab-lha the god of the hearth, who, by turns taking possession of his body, lead him to the particular spot where lies the defiled hearth. Arrived at the spot he plants his arrow-flag called "Dah-dar." As soon as this is finished, the spirits withdraw and the priest comes to his senses, when he inquires from those around him what inspired sayings he had given out. Being told every detail of the affair, he goes on to conduct the usual prescribed ceremonies. He or she (female priests are preferred) then in an authoritative tone summons the eight demigods (gods, nágas, yakshas, demons, genii, Pehar Gyalpo, mischievous female spirits called Mamos, and malignant planets such as the Indian Ráhu) and tells them—"I, according to the command of S'en-rab mipo the lord of the Bon religion, am conducting this ceremony. Ye all listen to what I say:—I shall just cleanse the polluted hearth of its defilement, in which work I exhort you all to help me. Remember, that I act like a tool in your hands, all success rests on your ingenuity. Wherefore be kind and merciful to me!" He now chants the usual *mantras* and conducts the ceremony.

When the first part of the service is over, he invokes his own Kah-bab, together with Thab-lha the god of the hearth, saying, "O Kah-bab &c., my appointed friends and guardians, and ye hosts of ancestors, vouchsafe me your aid at this critical time. If I fail in my object, disgrace shall fall on me and also on you all who favour me!" He concludes his invocation by a threat, saying, "if you do not make me successful, I shall henceforth withhold the paying of reverence and offerings to you all." He then finishes the service by ordering a host of diggers to dig out the spot indicated, to the depth of about 8 or 10 feet. He briskly walks round the ditch, his heart beating with the fear of missing the ball hid in the polluted ground. When the proper moment arrives the Kah-bab and Thab-lha by turns inspire him, when he throws himself into the bottom of the ditch in a senseless state and picks out the polluted ball. The Kah-bab having immediately withdrawn, the priest regains his senses and produces the ball before all who remain present and breaks it to examine the contents. If a living or dead larva of an insect of any kind is found within it, the operation is considered successful, otherwise not. If the ball be empty, the leper's case is considered hopeless, since the devil, born as a larva within the defiled ground soon after the

the progress of the Bon religion is traced from the reign of king Di-gum-tsanpo. This stage of the Bon religion is also called Gyu Bon Chhab-nag.[9]

2nd Stage, Khyar-Bon.

When king Digum tsanpo was assassinated, the Bon priests, not knowing how to conduct the funeral rites (so as to prevent his spirit from doing mischief to the living), invited three Bon priests, one from Kashmír, a second from the Dusha country and a third from the country of Shañ-shuñ, to perform the "funeral of the stabbed". One of these priests propitiated Ge-god khyuñ and Me-lha the god of fire, and thereby was enabled to travel in the sky, mounted on a tambourine, and to discover mines. He could perform miraculous feats, such as cutting iron with the quills of birds, &c. Another priest was skilled in delivering oracles and telling fortunes by *Jutika* and by deciphering mystic symbols on the fresh human shoulder-bone and thereby divining good and evil. The third priest was famed for his skill in conducting the funeral ceremonies of the dead, especially of those murdered with knives, &c.

Previous to the appearance of these Bon priests there existed no Bon religious theories. Since their time the Bon doctrines have come into existence. This stage of the Bon religion called Khyar-Bon (*i. e.*, erroneous Bon) was mixed up with the S'aiva doctrine of the Tirthikas.

The 3rd Stage or Gyur-Bon.

This is divided into three Sub-stages.

1st Sub-stage.

An Indian Pandit, having profaned some sacred Buddhist *Áchára* and having been charged with immorality, was expelled from his congregation. He went towards the north of Kashmír where, dressed in a blue gown, he proclaimed himself a great teacher. He wrote some heretical works, which he hid under the ground. After the lapse of a few years, he invited the public to witness the discovery by him of some ancient religious works. Thus a change was wrought in the Bon religion.

---

pollution of the hearth, and having got its wings, has fled towards the sky where he is out of reach. This indicates that a long time has elapsed since the defilement of the hearth. If a larva is found, it is immediately killed to ensure the cure of the leper. A dead larva inside the ball shows that the cure is at hand. The ball of earth is used as a charm against evil spirits. If the officiating priest fail to discover the defiled ball, he is considered an impostor. If it is found, no matter what its contents are, the priest must be rewarded suitably. He generally claims the limbs and head of the sacrificial animal, be it a cow or a pig, together with a complete suit of wearing apparel, called *Lu-gañ*. These rewards collectively are called *Legs-sol*. Animal sacrifices form an important part in the religious observances of the Bonpo.

[9] Or the *original Bon of the dark valley*, meaning dark age.

2nd Sub-stage, middle Gyur-Bon.

During the reign of king Thi-sroñ de-tsan, an edict was issued requiring all the Bonpo to renounce their faith and embrace Buddhism. The Minister Gyal-vai chañ-chhub requested the Bon priest named Rin-chhen chhog to adopt Buddhism which he declined to do. Having been punished by the king for his obstinacy, he became greatly enraged, and, in company with some other Bonpo, secretly composed Bon scriptures by means of wholesale plagiarism from Buddhist canonical works. The king hearing that the excellent sayings of the Tathágata had been converted into Bon scriptures, ordered the priests to be beheaded. Many of the Bonpo were thus killed; the rest secretly multiplied their works and, through fear, concealed them under rocks. Afterwards they brought out their religious books from the various hiding-places, in consequence of which those books are called *Bon ter-ma*, or "the hidden treasures of the Bonpo."

3rd Sub-stage, last Gyur-Bon.

Subsequent to the overthrow of Buddhism by Lañdarma, two Bon priests named S'en-gyur and Dar-yul dolag, from upper Ñañ in Tsañ, sitting in a solitary cavern in U', consecrated as a place of Bon religion, altered many Buddhist works[10] by using an orthography and terminology different from those of the Buddhists. These they concealed under the rock of Tsho-ña deu-chhuñ. Afterwards they brought the hidden books to light as if they were accidental discoveries.

Afterwards Khyuñ-po and other Bon priests, in the same manner, converted other Buddhist works into Bon scriptures.

These three stages of Gyurpa-Bon, *viz.*, the first, the middle and the last, are designated by the name of Chhab-kar or Dapui-Bon, meaning "the white-water (enlightened) or the resultant Bon."

The Bonpo are said to have got the counterparts of the Kah-gyur in general. The following are the names of their principal religious books and deities.

BON RELIGIOUS WORKS.

I TA-VA-*S*TON-PAI-*G*S'U'Ṅ. Philosophy and metaphysical works.

1. *R*dsog*s*-pa rin-chhen *g*ser-gyi *h*phreñ-va.
2. *R*tsa*h*grel *r*luñ-gi *s*pú gú.
3. Man-ñag *h*khor-lo ḥod-*g*sal.

---

[10] The Buddhist scripture—
Yum gya-pa was converted into, and given the Bon name of, Kham-chhen.
Ñi-shu ñapa " " " " " Kham-chhuñ.
Don-la bab-pa " " " " " Bondo.
Ssuñ dé-ña " " " " " Lubum-kah.

II. *S*GOMPAI-*G*S'UN̂ or meditative works.

1. Phun̂-po ran̂-*h*gyur thig-lé *d*gu-*s*kor.
2. *G*ser-thig.
3. Lu*s* sem*s* ñam*s*myón̂.
4. Sem*s* lún̂ ye-khri-*d*kar po.

III. *S*PYO*d*-PAI *S*KOR LA or Serials of rites.

1. Kham*s* *b*rgya*d* *g*tan la phab-pai *h*bum.
2. Ye-*g*shen *b*ko*d*-pa ḍon-gyi *h*bum.
3. *G*yun̂-drun̂ sa-*b*chú lam-gyi *h*bum.
4. *R*nam-dag tshul-khrim*s* *h*dul-vai *h*bum.
5. *D*ge-*r*gya*s* tshog*s*-chhen *r*dsog*s*-pai *h*bum.
6. Na*d* *h*bum nag-po.
7. Tshe-*h*bum khra-vo.
8. *S*man-*h*bum *d*kar-po.
9. *G*to-*h*bum nag-po.

IV. *H*PHRIN-LAS-*S*KYI *S*KOR LA or Serials of epistles.

1. *G*to-thab*s* sum-*b*rgya-drug-chú.
2. *D*pya*d* thab*s* *b*rgya*d* khri *b*shi-*s*tón̂.
3. Kyer-*s*gom *b*shi.
4. *S*ko*d* chon̂-*r*gya*d*.
5. S'i-thab*s* sum-*b*rgya drug-chú.
6. *H*dul-thab*s* *b*rgya*d*-chú rtsa-*g*chig.

These works are also called the Bon works of Chhab-nag srid-*r*gyu*d* or the mystical works of the Dark world.

WORKS OF BON MYSTICISM.

The following are the Mystic works of the Chhah-*d*kar period or the later period :

1. *S*pyi-*s*pun̂*s* bon *m*dsó*d*.
2. Pha-*r*gyu*d* drag-po *d*gu *h*du*s*.
3. Ma-*r*gyu*d* ñi-ma *d*gu-śar.
4. Khro-*r*gyu*d* *m*do chhen *h*byam*s*-pa.

The following are the names of the principal Bon gods and goddesses.

	1. Srog-gi sag-*b*rdar-chhe.
	2. ,; ,, ,, ,, chhún̂.
The red wrathful razor spirit.	3. Dra-va *s*pu-gri-*d*mar.
The black ,, ,, ,,	4. ,, ,, ,, ,, nag.
	5. N̂al-*h*byam*s* ma moi khrag *s*grúb.
The tiger god of glowing fire ; he is the popular god universally worshipped.	6. *S*tag-lha me-*h*bar.

The messenger-demon.	7.	Pho-ña bdu*d*.
The well known Pehar-*r*gyalpo.	8.	*R*gyal-po.
The god of sound.	9.	*S*gra-lha.
The great demon.	10.	*B*tsan.
	11.	*G*sa*s* *g*dañ.
	12.	*D*mú.
	13.	*K*lú.
	14.	*G*ssah.
	15.	*D*vañ-phyug-gi *s*grub *s*kor.
	16.	Byol-sóñ *h*khor lo *d*gú-*s*kor.
	17.	*G*tañ-kyi-*s*kor.
	18.	Ro-ku-śag-pa *s*pyañ-*r*gyug-gyi-*s*kor.

In those Bon scriptures are taught the unsteadiness of all things, *karma*, *phalam*, love and compassion, the *Bodhisattva* feelings; the aphorisms of the six páramitá; the five ways (of emancipation), the ten *bhúmis* (the stages of perfection); the nomenclature of the three images &c., inauguration, formation and perfection (ceremonies) vows, sanctification (consecration) or sacrifice (*yajña*), construction of circles and figures of mystical worship, funeral ceremonies and many other like rites and ceremonies as are similar in form and nature to those of the Buddhists. In the place of

Buddha	they have	Ye-śen-té thal.
Chhoiku or Dharma káya	,, ,,	Bon-ku.
Yum-chhen mo	,, ,,	Sa-tri-é sañ.
Loñku (Sambhoga káya)	,, ,,	Kuntu-ssáñpo.
Tul-ku (Nirmáṇa káya)	,, ,,	Sridpa-ssáñpo.
Dá-Chompa (Arhat)	,, ,,	S'en-sra.
Chyañ-sem (Bodhisattva)	,, ,,	Yung-druñ sempah.
Lama (guru)	,, ,,	Bon sa.
Idea of Vacuity (śúnyatá)	,, ,,	Ḥamo-ñid.
Sachu (Daśa-bhúmi)	,, ,,	such names as Dri-med-śel-gyi-sa; Ḥossérphro-va rig dsin-sprin-phuñ and Chhya-gya gyurva-sa, &c.

In orthography, rhetoric and syntax there are many deviations (from the ordinary rules).

In doctrinal and meditative points the Bon are divided into heretic and orthodox Bon.

In some Bon books it is mentioned that in void beginningless eternity, there came to exist entity of eternity, from which grew "hoar-frost;" from hoar-frost grew dewdrops as big as peas, &c. Ultimately all bodies and animals are said to have grown out of an egg. The Bonpo have borrowed their ideas of S′akti and Iśvara from the Tirthikas.[11] Accounts like the above regarding the growth of the world are also to be met with in all the Tantrik works of the Buddhists and the Bráhmans. The Bon work called "Du-pa rinpo chhe gyud" relates that all material things have no (absolute) existence. Their existence is relative to (our) wishes and desires. When attachment is withdrawn from them for the sake of attaining to a state of (mental) vacuity (*śúnyatá* or *bonku*), they exist not. Both these (existences)[12] being comprehended, and at the same time not clung to, by the mind, it is said to have obtained Jñána of S′únyatá, the bright lustre of which, being devoid of anxiety and deliberation, encompasses all. This is the real object of meditation. Thus by effecting a union of Darśana and meditation, as its consequence, the attainment of emancipation is secured.

According to Chyan-ña lodoi Gyal-tshan, Kun-khan S′erhod and Tag-tshañ Lochava, the ninth volume of the Bon Aphorisms is said to agree with the theories of the Dsog-Chhenpa class of the Ñiñma sect. In Bon works which they possess, it is stated, that the original basis—the purest nature which preceded both S′en (Buddha) and Sattvam (animal being)—is the clear bright *vaçuity*, called the nature of Bonku (the Supreme ideal of the Bonpo). It is not covered by the gloom of ignorance and desires. Being nothing in itself, it has yet produced the consciousness of all. From the beginning existing in the essence of S′en (Buddha), it is not produced by the agency of Karma. Being unconnected with the consequence of actions, it is self-existent, existent without effort. Its perception by the mind does not improve it, nor does the ignorance of it affect it in any way. It equally exists in Buddha and Sattvam (animal being), without altering them for good or bad. This primeval Cause—the Bonku, which encompasses all, is the basis of all matter. All material and transmigrating existences (Sattvam) have emanated from it All things are contained in it. Its action is diffused without obstruction. By well-regulated thinking, when it is perceived, the mind acquires Jñána (wisdom). But if it is not thought upon, *i. e*, not perceived, the mind acquires Karma or the cause of sin. If its meaning (S′únyatá) is investigated, the real basis, the abode of time and space, is evident. To reflection and well-regulated thinking it is fully manifest. From its conception the three Bon images (ideals) are clearly seen, and then the soul is absorbed in the essence of "S′en." The clearest lustre (S′únyatá) which is identified with Bonku or with the basis of all existence when discerned, is found self-existent in its own essence which is the nature of

---

[11] The prefect of Di-guñ, named Jig-ten gonpo, observed that the Bonpo have erroneously adopted the principles of the Tirthikas.

[12] The relative and illusory existence of material things.

Buddhas[13] and living beings; yet being thus self-existent, on account of the want of discernment (true knowledge), its existence is screened by the gloom of Avidyá; for example, though butter exists in milk, yet to the eye of the ignorant it does not. The Bonku, being perceived by the mind, becomes uncovered and manifest in all its parts. Thus the supreme nature of the basis, being uncovered and naked, is pre-eminently manifest, when the action of the mind, deliberation and effort, have nothing to do with it; then rises up Jñána when the thinking power is obstructed, and remembrance ceases. The mind, having lost its functions, becomes passive and ceases to think. Its position then may be compared with the instantaneous bliss of the coitus of the sexes. The mind having ceased to form a conception of the Supreme cause, Bonku or S'únyatá stands like an image on the mirror.[14] This glorious lustre is called the self-born Jñána of Vidyá; the undivided attention towards it is called the Bon-Darśana. In the region of mind, called Chitta-rinchhen, which is immense and located on the eight petals of veins, there are the five lustres of appearance belonging to the five organs of the body. In the middle of these five lustres sits Bonku like a crystal ball, wrapped round by the thread of the five Jñánas. Its essence, being S'únyatá, is never perpetual; nor, coming under the cognizance of Vidyá, is it subject to annihilation. That this invisible essence exists in this manner must be learned by meditation. Existing without cause and unseizable, it is pure in its nature.

MEDITATION.

In the fully enlightened state of mind, the continued and inseparable fixing of the mind on the Bonku is called the "Gom" or meditation. There are three kinds of "Gom."

1st, Thun-gom; 2nd, Nañ-gom; 3rd, Lóñ-gom.

Thun-gom is performed by one's being initiated into it by a spiritual guide, *i. e.*, Lama, by counting (of beads or names) and chanting of the virtues of Bonku. In the first stage of *gom*, the mind does not remain absorbed in the particular object of meditation. In the middle stage the absorption and distraction are equal. In the last stage the mind enters into complete abstraction. The perfect abstraction being brought under control, it can be suspended, put off and resumed, at pleasure. When the opportune time, the time of attaining sainthood, comes, this meditation (gom) reaches its limit.

2nd, Nañ-gom. At proper times, the mind gets filled with the light of Átma-mukti-jñána, and then passing into deep meditation (yoga) becomes fully abstracted and at last even devoid of meditation itself.

---

[13] That is, Bon saints.

[14] The mirror is here compared with the mind which is unconnected with the image.

When this state is attained, the limit of Nañ-gom is reached. This state may be compared with the calm and unruffled sea, the ideal of Supreme inaction.

3rd, Lóñ-gom. When, after acquiring all sorts of Vidyá and seeing the real object ("Don", meaning an object aimed at), the meditation is finished and the mind has ceased thinking of the attainment of the essence of S'únyatá, the time of Lóñ-gom begins. At this time all sins, wicked thoughts, &c. turn into Jñána, all visible and invisible matter enter the all-pure region of S'únyatá, or Bonku, when transmigratory and emancipated existence, good and evil, mental attachment and separation, &c. turn one and without difference. When by this most perfect kind of meditation the sublime state is attained, the Lóñ-gom is gained.

These theories and notions of the Bonpo bear a striking resemblance to those of the Dsóg-chhenpa sect of the Ñiñma school.

The following are the nine vehicles of the Bon religion called *Bon-Srañ.*

1st.	1. Phwa-śen. 2. Nañ śen. 3. Thul-śen. 4. Srid-śen.	These four *yánas* are called the causative vehicles.
2nd.	1. Ge-ñen. 2. A'kar. 3. Tañ-sruñ. 4. Ye-śen.	These four are called the resultant vehicles.

3rd. The last vehicle which contains the essence of all the above eight vehicles, is called the Khyadpar-chhenpoi Thegpa.

The Phwa-śen contains three hundred and sixty questions and doubts and 84,000 proofs. The Nañ-śen contains four Gyer-gom and 42 Tah-rag. Gyer-gom and Tah-rag are divisions of the meditative science of the Bonpo. The Thul-śen teaches the working of miracles. The Srid-śen treats of 360 modes of dying and funeral services, the four ways of disposing of the dead, and 81 methods of suppressing evil spirits.

The Ge-ñen treats of the aphorisms regarding the bodies, animal life and their growth and maturity.

The A'kar describes many mystic (Tantrik) demonstrations. In the Yé-śen the various kinds of mental demonstration, and in the Khyad-par-chhenpo the five classes of Upadeśa (instruction) are described.[15]

The Tañ-sruñ describes the kinds of *Bum, i. e.*, the tombs for the deposition of relics.

The four Gyu Bon, or vehicles of effects, take away the four discriminations of remembrance and understanding. The study of A'kar and Yeshen refines the obfuscating defects of learning.

---

[15] Besides the essence of the other eight vehicles, as previously mentioned.

The Khyadpar-chhenpo can singly effect what the others can jointly do. Again the four Gyu Bon can secure the enjoyment of the four Bhúmis (stages of perfection) of honourable action, for several ages. The Ge-ñen and Tañ-sruñ, after carrying the Sattvam happily through three *kalpas*, will take it to emancipation. The Ákar and Ye-śen can give it, after its first birth, freedom from existence. The Khyadpar-chhenpo can secure to a person emancipation even in this life. (The author remarks:—although I could not obtain a work in which the rise and progress, theories and principles of the Bon religion are exhaustively described, yet I have written according to the account delivered to me by the sage of Diguñ respecting the earlier, mediæval and later Bonpo). Learned and erudite professors of the Bon religion, when it attained to prosperity, held a synod in the celebrated cavern of "Sañ-vai-Bon Phug" in the Mañkhar country. Priests and sages from India, Persia, China and Tibet assembled there. A compendious compilation of Bon "gomo" (or sútras), about 84000 in number, was made, which is well known by the name of Sañ-ñag-dsoñ-thad ñi-hod-gyan.

Among the principal classes of Bon monasteries of Tibet the S'enderdiñ monastery and the Yuñ-druñ monastery of Gyal-mo-roñ were most noted. In later times, by the command of the Emperor of China, most of these were pulled down by the Imperial armies and the Bon monasteries and religious establishments greatly devastated. On the site of the Yuñ-druñ Lhadiñ monastery, a Gélugpa monastery called *Gahdan* was erected. An edict was issued forbidding all to follow the Bon doctrines, in spite of which many Bon priests and numerous monasteries still exist in Gyal-roñ, Tsho-kha and Koñpo and other places. The Gonparituo of Kham contains 500 priests. Formerly the Bonpo had no monastic system. Now after the example of the Buddhists they have monks and nuns, some of whom have pretensions to incarnate existence. But in general they are great drinkers of wine and eaters of meat. They are not careful to refrain from female company.

II.—DISPUTE BETWEEN A BUDDHIST AND A BONPO PRIEST FOR THE POSSESSION OF MOUNT KAILÁSA AND THE LAKE MÁNASA.[1]

Je-tsun Melarepa with a great many pupils arrived at mount Tési (Kailása) from Pu rañ. There he was welcomed by a number of local deities. They made him profound salutations and large and curious offerings. Besides making him a gift of the lake Mapañ and mount Tesi for the use of himself and his pupils as a hermitage, they undertook to protect his devotees and followers, after which they returned to their respective abodes.

When the teacher with his pupils arrived on the shores of the lake Mapáñ to make religious obeisance and reverence, the Bon priest Naro-Bon-chhuñ and his sister, being informed of his fame and of his visit to Tési, came to meet him there. Knowing him, yet pretending not to recognise him, Naro thus accosted the teacher and his pupils:—"Whence are you and whither do you go"?

The venerable Je-tsun said—We are come from one of the mountains called La-chhyi (Laphye), in order to sit in meditation on the top of Tesi.

Naro.—What is your name?

Je-tsun.—I am called Melarepa.

Naro.—Well then! the snowy Tesi, the Lake Mapañ and yourself are alike. From a distance your fame is great, but on a near approach it is stript of its wonder. Admitting this mountain to be wonderful, I must say it is the possession of the Bonpo. If you wish to live here, you must practise Bon rites.

Je-tsun.—According to the Buddhist revelation this mountain is a place of pilgrimage for Buddhists in general, and more particularly by the prophecy of the sage Marpa it is destined to be the place of my hermitage. You must consider yourself fortunate to have owned it so long. If now you continue to reside here, you must follow the practices of our religion; otherwise you may go wherever you like.

Naro-Bon-chhuñ.—You two, though from a distance are of great fame, yet are little at a near view.[2] If you have something wonderful in you, come, let us compete with each other in the exhibition of miracles, so that whoever wins should own this place.

[1] Literally translated from a block-print said to be 800 years old.

[2] Lit. "at the bank," which is a Tibetan idiom, meaning "near."

So saying, Naro stood like a colossal figure over the lake, placing his legs on its opposite banks, and in metrical language thus spoke first to Kaṅkar Tesi:

Though great is thy fame,
Yet with snow thy head is clad.

Then to Mapaṅ-yu-tsho:—

Though great is thy name,
Being water, by water thou art crossed.

Lastly to Melarepa:—

Though great is thy fame,
Yet in old age half naked[3] thou liest.
From thy mouth out pours a pretty song.
Thy hands an iron trident hold;
Save this no wonders in thee lie.

Then in exclamation, to his gods:—

Thou unchangeable Bon-yuṅ-tuṅku Ye-śen,[4]
And thou legion of exalted gods!
Thou wrathful Tho-gyal, sucker of blood
With widely yawning mouth!
Thou nine-headed Vu-gupa
Who wieldest twice nine arms,
And whose incarnation Gye-god is,
Thy head what prodigies holds!
Thy sister is Sriṅ-gyalma.
I Bon-chhuṅ am her devotee.

Then looking defiantly towards Je-tsun:—

Miracles—if shewn, should be shewn like this.

Hearing this challenge, Je-tsun sat himself down, covering the lake Mapaṅ. Lo! it was a curious sight. The lake did not contract, nor did Je-tsun enlarge his body, yet each exactly fitted on the other.

He then sang this Hymn—

Ho! Ho! Demon come and hear!
On the top of the Vulture-peaked hill,[5]
On the exalted throne—by eight lions borne,
The Victor S'ákya Thuba sits;
Matchless and one with him in wisdom,
In the mansion of Virtue, called Hogmin,

---

[3] Referring to his Indian ascetic dress.

[4] The ideal image of the Bonpo.

[5] Gṛidhrakúṭa Parvata on which S'ákya Siṃha used to sit in yoga.

The great sixth Buddha Dorje-Chhañ[6] presides,
In spirit with the Divine Mother united.
In the sages Tilo and Naropa he became incarnate.
The latter, who kept the door of S'rí Nalendra,
And the Lochava Sañgye-Marpa,—
These I ask for benediction.
I, famed far and wide,
To carry out the word of Marpa of Lha-brag,
Have come to Tesi to meditate,
For my own and others' good.
And now, O heretical Bonpo, comest thou?
Let me retort on thee with a repartee!
Kañkar Tesi of great fame,
Whose crest with snow is white,—
So white is Buddha's faith.
Mapañ, the famed lake of Turquoise,
Whose water over water runs,—
So all matter in vacuity is lost.
I, Melarepa of great fame,
An old man who naked lies,
Am sprung from Wisdom and Remembrance.[7]
My lips sing a little song,
For all Nature at which I look
Serves me for a book.
The iron staff that my hands hold,
Guides me across the ocean of migratory life.
I rule over mind and light.
For prodigies and miracles to shew
I depend not on earthly gods.
Tesi, the Prince of the World's Mounts,
To Buddhists in general possession yields,
And to Melarepa chiefly and his votaries.
Ye heretical Bonpo be useful and good,
Come and embrace the sacred Dharma!
If you do not,—vanquished by miracles,
Go hence to other and distant lands!
Beware of such prodigies in future!

He then held lake Mapañ on the tip of his thumb.

---

[6] This is the chief Buddha or Dharmakáya of the Gelugpa school.

[7] That is, the virtue of remembrance of former Buddhas.

Naro Bon-chhuṅ.—This time your miracle appeared somewhat wonderful. As I arrived here prior to you, allow me to remain along with you. Let us try a second feat in showing miracles to see who wins!

Je-tsun.—I cannot condescend to exhibit religious miracles in rivalry with a juggling enemy; if you cannot adopt my religion, better remove yourself elsewhere.

Naro.—I cannot cast off the faith of Yuṅ-druṅ from my mind. If in exhibiting miracles you can defeat me, I shall out of my own accord go away. But you cannot use force against me; for to kill me or to beat me, is against your vows of religion. By no other means can you drive me out. Come, therefore, let us try another feat!

He then advanced to make Bon-kor, *i. e.*, to go round the sacred peak of Tesi from right to left. On the other hand, Je-tsun performed the "Chho-kor," *i. e.*, circumambulated from left to right according to the Buddhist method. Coming thus from opposite directions, the parties met together near a huge rock called Phapoṅ, situated in the north-eastern Jóṅ of the country.

Naro.—Your circumambulation is well done, now let us once more do the same according to the Bon fashion!

So saying and catching Je-tsun's hands, he attempted to draw him towards his own way.

Je-tsun.—Even if I move in the wrong way, I shall not betake myself to the contrary faith or religion. But (added he) do you now follow our religion!

When they were pulling one another by the arm, each to bring the other to his way and creed, their foot-marks remained imprinted on the top of the rock Phapong. At last by the force of holiness, Je-tsun succeeded in drawing the Bonpo towards his own way of circumambulation. When arrived at the northern back of Tesi, Naro said,—"from behind this let us make the Bon-kor".

Je-tsun.—If you can.

Naro.—This time you may have appeared great, but let us once again wrestle!

So saying, he hurled a piece of rock of the size of a yak, towards Phapoṅ. Je-tsun also at the same time threw one twice as large as Naro's.

Naro.—This time you have won, but one or two winnings are no test at all. Come let us try again!

Je-tsun.—If the sun, moon and the stars all combine to throw lustre, yet the sun and moon can alone dispel the gloom of the world, so if you and I wrestle together, you cannot be equal to me. Tesi therefore has passed under my sway. I am victorious. For your satisfaction and also in order that all men may see the superior might of Dharma, you may try another feat. Je-tsun therefore sat on the cavern called Padma-Phug,[*] on the western Jóṅ of Tesi. When the Bonpo reached the eastern side, Je-tsun from the west, stretching his legs, trod on the cell of the Bonpo, where he left a foot-mark, and said,—"if you can do the like, come and do it." Naro attempted from the east to reach it with his leg by stretching it to the west but it did not go half the way. Seeing this, the Asuras (Demons) from the skies broke into loud laughter. The Bonpo, who was a little ashamed, again wanted to try another feat and advanced to perform the Bon-kor. Je-tsun himself having proceeded with his Chho-kor, they met to the south of Tesi, when a heavy shower of rain fell. At this, Je-tsun, wanting a place of shelter, asked him whether he could construct the walls or the superstructure of the house, which he meant to erect for shelter.

Naro.—I shall undertake to construct the roof.

Je-tsun now commanded the Phapoṅ to come to the spot and leave a portion of his body to serve him as a wall. Phapoṅ consented, and lo! there was erected a huge fabric without a roof. Naro-Bon-chhuṅ several times attempted to put a stone roof over the wall, but every time he failed.

* * * *

Naro.—You call me a juggler, but it is you who every time I have seen play the part of a juggler. I am not satisfied with these your miracles. Both you and I, on the 15th of this month, shall run a race up to the top of Tesi. Be it settled that whichever of us shall reach the top of Kaṅ-Tesi quicker, will get possession of it. It will then be seen which of us possesses the chief perfection.

Je-tsun agreed to the proposal, but remarked,—"what pity! you mistake the light of Bon-bum for the chief perfection. He who possesses it should be able to see his own face. In order to be able to do so, one must embrace the system of meditation prescribed in our religion".

Naro.—What good and evil lie in your mind and in mine, what the difference is between the Bon and Buddhist religions, whether your previous prodigies are mere illusions or proceed from propitiation,—I cannot make out. Now let us be sure of seeing which of us can be on the top of Tesi earlier.

The proposal was accepted by Je-tsun. In the meantime Naro-Bon-chhuṅ diligently offered prayer to his tutelary deity, while Je-tsun steadily applied himself to the exercise of his ascetic rites.

---

[*] Lotus Cavern.

At the dawn of the 15th, Naro-Bon-chhuñ being dressed in a blue fur-dress, playing the cymbal, called "*shang*", and mounting a tambourine, went towards the sky. The pupils of Je-tsun, seeing this, went to him and found him fast asleep. One of the pupils named Re-chhuñ addressed him:—"Venerable Sir! Naro-Bon-chhuñ, early in the morning, riding his own tambourine, flew towards the sky. By this time he has reached the waist of Tesi." Je-tsun being still in bed, his pupil thought that the Bonpo had gained the day and carried off the possession of the place. Earnestly he pressed Je-tsun to get up, and the same was done by all the pupils. Je-tsun now looked with fixed eyes towards Tesi and said—"behold! the Bonpo, being unable to climb the precipice, has gone round it." Then in a finger's snapping he mounted the sun-beam and, by spreading his raiment as outspread wings, flew towards the top of Tesi, which he reached in a moment along with the glowing sun. At this time the Lamas belonging to Je-tsun's order and the god Chakra Sambara witnessed the spectacle, and were delighted with the triumph of Je-tsun. When Naro-Bon-chhuñ was attempting to rise above the neck of Tesi, he fell down, and his tambourine rolled down towards the southern valley of Tesi.

III.—PART I.—EARLY HISTORY OF TIBET[1].

(Introduction.)

Prior to the advent of S'ákya Siṃha,[2] during the war between the five Páṇḍavas and the twelve legions[3] of Kaurava armies, one of the warrior princes, named Rúpati[4], through dread of war, fled towards the snowy country of Tibet. For fear of being pursued by the enemy or by his suzerain, the chief of the Kauravas, for deserting the field, he dressed himself in female attire, and with only one thousand followers took shelter in Tibet. He found the country, ***Púgyal***, (for such was the ancient name of Tibet, which in later times was converted into Bod,[5]) widely peopled by a race of men, still in a primitive state. They welcomed him as their king. By his mild and peaceful behaviour he won their affection and ruled over them for many years. Under his and his descendants' rule the people multiplied, enjoyed prosperity and developed the arts. From Rúpati to the foundation of monarchy in Tibet by Ñaḥ-Thi-tsanpo,[6] in the beginning of the fourth century before the birth of Christ, the history of Tibet is very obscure. During this long interval, after the fall of the house of Rúpati, the country was partitioned into several petty states, ruled by insignificant native chieftains and princes. Of this uninteresting period scarcely any reliable record, traditional or legendary, is extant, sufficient to throw any light on the earliest history of Tibet. Among the ancient records, the Debther-N̂onpo[7] and the Chho Jun̂[8] are by far the most correct. Their authors appear to have been less influenced by love of the marvellous, or the appetite for wonders, which marks all early oriental writings, and to have collected their materials in an exemplary spirit of sober investigation. The Debther-N̂onpo and the Chho Jun̂ are therefore unique and rare ancient historical records of Tibet. According to them, the country was peopled at the same time as India, in the beginning of the present Kalpa, a fact accepted by most modern native historians. The Gyal-rab or royal pedigree, written by the fifth Gyalwa-Rinpochhe, and Mani Kahbúm, one of the oldest legendary works, ascribed to king Sron̂tsan-gampo, besides other works of historical fiction, give altogether a different and fabulous account of the origin of the Tibetans. In the sacred books of Kálachakra,[9] Manjuśrí múla tantra,[10] and Ashṭa-sáhasrika,[11] Buddha foretold that his religion would be widely diffused in the snowy country of the north, where many Saints would also appear.

---

[1] The following account of Tibetan history is obtained from original sources. I have consulted Debther-ñon-po, Chho juñ by Bú-ton, Ga-nag-gi-tsi, and the original ancient records of Tibet called Ñoṇ-gyi-yig-tshañ-ñiñ-pa, &c., &c. The preparation of a complete history of Tibet from the earliest period to the present date for which I am at present engaged in collecting materials is under contemplation.

[2] ཐུ་བདང་ཟླ.

[3] Indian legions amounting to one Akshauhiṇí or Tibetan Puñ-tshog.

[4] རུ་པ་ཏི་

---

[5] The Tibetan *b* when unaccompanied by any other letter is pronounced like *p* slightly aspirated, and the final *d* in Tibetan is always mute. Therefore Bod or བོད is pronounced as Po or Pu of Pu gyal.

[6] གཉའ་ཁྲི་བཙན་པོ་ [7] དེབ་ཐེར་སྔོན་པོ་

[8] ཆོས་འབྱུང་ Chhos-ḥbyun̂; in Tibetan *by* when preceded by *ḥ* is pronounced as *j*.

[9] དུས་འཁོར་ [10] འཇམ་དཔལ་རྩ་རྒྱུད་ [11] བརྒྱད་སྟོང་པ་

CHAPTER I.

MONARCHY (416 B. C. TO 617 A. D.)

(Bon Period.)

Four hundred and seventeen years, according to Búton's[12] chronology, after the nirváṇa of Buddha, in the year 416 B. C., was born in India, Ñaḥ-Thi-tsanpo[13] the first of the Tibetan kings who established universal sway over Tibet. The fifth son of king Prasenajit of Kośala[14] was born with obliquely drawn eyes and light blue eyebrows of the colour of turquoise. As soon as he came out of his mother's womb, the infant was found possessed of webbed fingers and two rows of teeth, fully developed, and white as a conch shell. Apprehending great evil from such ominous signs in the infant, the parents packed it up in a copper vessel and floated it away on the river Gangá. A farmer finding it, carried it to his wife who nursed it. Being a simple-hearted man, he did not try to pass off the child as his own, but revealed the truth; and the strange story of the forlorn royal child became known to all. Informed of the antecedents of his life, how he had been thrown into the Gangá by his royal parents and nursed by the good farmer's wife, the youth's mind was overcast with sorrow and thoughtfulness. Being born a prince, he could not bend his mind to apply itself to the lowly pursuits of a farmer's life. After passing many a day in anxiety and melancholy, he quitted the farmer's house, bidding his country a mournful farewell, with a firm determination either to reign as a king or not live at all. He proceeded northward to the Himálaya mountains subsisting on wild fruit. Unmindful of the difficulties of a mountain journey or of death, he travelled further and further north, till by the blessing of Árya Chenressig he arrived at the summit of the Lhari[15] snowy mountains of Tibet and surveyed the surrounding regions. His heart was delighted on descrying land on the north, and gradually descending as it were from heaven, down the slopes, he arrived at Tsan-thañ,[16] a great plateau with four passages on its four sides. Here he was met by many natives, who, struck with the graceful looks of the stranger, asked him respectfully, who he was, and where he came from. He replied to them by signs (for he knew not their language) that he was a prince, and pointing his finger towards the top of Lhari, he showed the direction he had come from. The Tibetans, who were sure they had seen him come from the direction of heaven, took him for a god who had descended from the celestial regions. Prostrating themselves before him, they entreated him to be their king, an offer which he gladly accepted. Then placing him on a chair, they carried him in solemn procession to the central country. From being borne on the back of men, seated on a chair, he was called by the name of Ñaḥ-Thi-tsanpo[17]. He erected the great palace of Yumbu Lagañ,[18] on the site of which Lhasa was built in later days. He married a Tibetan lady named Nam Mug-mug,[19] who, says the legend, was a fairy. After a long and prosperous reign of many years, which was marked by the dispensation of wise and impartial justice, the king died, leaving the throne to his son Mug-Thi-tsanpo.[20] The first seven kings, counting from Ñaḥ-Thi-tsanpo, are well known by the designation of Namgyi-Thi[21]. Ḍi-gúm-tsanpo, the eighth in descent from Ñaḥ-Thi, was married to Lu-tsan-mer-cham,[22] by whom he had three sons. His minister, named Lo-ñam, was a very ambitious man, who rebelled against him. An internecine war followed in which the king was killed.

---

[12] The great Tibetan author Búton was born at Tho-phug in the year 1290 A. D. He became the abbot of the Shálu monastery near Taśilhunpo. He was the first great Tibetan scholar who compiled the two well-known Encyclopædias of the Buddhist scriptures, called Kah-gyur and Tan-gyur, which were formerly scattered in detached pieces among different monasteries. He wrote the great critical chronological work, called Khapa-kah-chad, which is followed by the Gelugpa writers, and composed 40 volumes in different branches of sacred literature, astrology, medicine and history.

[13] This famous monarch is said to have been sent to India to be born in a royal family of undefiled race in order to spread Buddhism in Tibet. The spirit of Chenre-ssg entered into him to make him one of the dynasty of Prasenajit.

[14] ཀསལ་རྒྱལ་ Kasala *r*gyal, *i. e.*, King of Kasala.

[15] བོད་ལྷ་རི or ལྷ་རི་ of Bod.

It was during this war that the use of the coat of mail (khrab) was first introduced into Tibet from Már-Khám.[23] The victorious minister, having married one of the widows of the late king, usurped the throne and obliged the three princes to fly towards Koñ-po. He reigned for several years. The widow of the late king and mother of the three princes, by invoking the goblin Yar-lha-śampo, got a son, who eventually rising to the post of minister killed the usurper. He now invited the three exiled princes from Koñ-po, the eldest of whom named Chya-Thi-tsanpo[24] quietly ascended his ancestral throne. Chya-Thi-gyal was married to Bom-thañ. During his reign the Bon religion spread largely over Tibet. Mug-Thi-tsanpo, marrying Sá-diñ-diñ, begat Diñ-Thi-tsanpo, whose son, by his queen Sa-thám-thám was king So-Thi-tsanpo. So-Thi-tsanpo was married to Dog-mer-mer by whom he got Mer-Thi-tsanpo, who by his wife Dag-Kyi Lhamo Karmo had a son Dag-Thi-tsanpo. This king married Srib-Kyi-Lhamo, of whom was born Srib-Thi-tsanpo. These kings are said to have ascended to the skies, being carried there by their queens who were celestial beings, in consequence of which their mortal relics were not left below. The ancient Tibetans while giving an Aryan origin to their first sovereigns, did not fail to show greater regard for their country by giving their princess an altogether divine origin. Srib-thi-tsanpo married Sa-tsan-luñ-je, who gave birth to the celebrated king Di-gum-tsanpo, under whom the Bon religion became greatly diffused in Tibet. Both he and his father are well known in Tibet by the title of Parkyi-diñ.[25] The names of all these kings, it is worthy of remark, were formed by a combination of the names of their parents, the mother's name generally preceding that of the father. Bom-thañ gave birth to king Esholeg whose son, by Mu-cham Bramana, was king Desholeg. Desho married Lu-man-mermo who gave birth to Thisholeg, who again by his Queen Tsan-mo-gur-man had a son Guru-leg. Guru married Tsho-mandoñ who gave birth to Doñ-shi-leg, who married Man-pumo and by her had a son Isho-leg whose son by Mú-cham was Ssa nam-Ssin-de. The six succeeding kings were designated by the title of Sái-leg, meaning the excellent of the land. Ssanam Ssin-de married the fairy Tsho-man-thi-kar of whom De-Phrul-Nam-Shuñ Tsan was born. This prince was married to Se Ñan mañma who gave birth to Se-Nol-De, whose son by Lu mo-mer-ma was SeNol-po De, who again by Mo-tsho begat De Nol-Nam. This last prince married Thi-Man-Jema who gave birth to De Nolpo, who again by his wife Se tsun-Ñan Je had a son De Gyalpo. De Gyalpo was married to Man-tsun-lúg-goñ who gave birth to De-tin-tsan, who married to Ñi-tsun-mañ ma-Je begat Tori Loñ-tsan This succession of eight kings who followed the Sái-leg (ས་ཡི་ལེགས) were distinguished by the surname Dé. All the queens of the above monarchs were believed to be superhuman beings, such as fairies and sirens, who or enjoyment of earthly pleasures had assumed human forms. They were believed to have gone to heaven with their bodies, taking their husbands with them.

---

[16] བཙན་ཐང་ in the Province of *d*U*s*.

[17] *g*Ñaḥ, back; khri, chair; *b*tsanpo, king (chair-borne king). See Note 6 on p. 212. *b*Tsanpo (བཙན་པོ) is a purely ancient Tibetan word meaning the powerful. *B*tsan means a spirit, and po is the substantive particle which also partakes of the nature of a definite article.

[18] ཡུམ་བུ་བླ་སྒང་ [19] གནམ་སྨུག་སྨུག་ [20] སྨུག་ཁྲི་བཙན་པོ་

[21] *g*Nam = heaven, gyi = of, Khri = throne; hence celestial throne.

[22] ཀླུ་བཙན་མེར་ལྕམ་

[23] A province of Kham on the north-west of U (*d*U*s*).

---

[24] བྱ་ཁྲི་བཙན་པོ་ It is to be borne in mind that the ancient Tibetan word བཙན་པོ་ is now obsolete being replaced by the word *r*gyal (རྒྱལ), meaning Victor and equivalent to Sanskrit Rájá.

[25] བར་ཁྱི་ལྡིང་ *i. e.*, The soarer of the middle region.

In fact those princesses were not chosen from Tibetan subjects but from the families of the independent sovereign princes of the border countries. In Tibet a princess is called Lhamo or goddess. The queens who came next in succession were generally taken from among the subjects, and were therefore of human origin. It was in the 27th generation of the royal succession that the Bon religion rose to the zenith of its power, and when the sun of Buddhism was shining in its meridian lustre all over Jambudvípa (says the Debther Ñonpo), snow-girdled Tibet remained buried in the impenetrable darkness of Bon mysticism. King Tori was married to Din tsún Chyañ-ma who gave birth to Sú-Thi-tsan who being married to the Princess of Mán named Thi-Kar begat Thi-da-Púñ-tsan. This last prince also married a Princess of lower Kham named Lú teñ by whom he got Thi-thog Jetsan. All these princes are said to have been peculiarly favoured by Chenressig, though Buddhism was as yet unknown in Tibet. All these five kings were known under the title of Tsan.

In the year 441 A. D.[26] was born the famous Tibetan king Lha-thothori Ñan-tsan, believed to be the incarnation of Kuntu Ssañpo.[27] He ascended the throne in the 21st year of his age. When he reached the 80th year of his age, in the year 521 A. D., there fell from heaven on the top of the great palace of Yumbu Lagañ a precious chest, which when opened was found to contain the following objects:

(1.) Dode-Ssamatog (Sútránta Piṭaka).
(2.) Ser-kyi-Chhorten (a golden miniature shrine).
(3.) Pañ-koñ Chhyagya-Chhen po (a sacred treatise on palmistry and mysticism).
(4.) Chintámani Norpo and Phorpa (a Chintámani gem and cup).

Being the first prince who was favoured by heaven with the precious gift of the sacred treasures, Lha-thothori has been deified by the Tibetans. As the king, sitting in council with his ministers, was debating on the value and merit of the divine gift, there was heard a voice from heaven, saying that in the fifth generation the meaning of the contents should be revealed. The king, therefore, carefully preserved them in his palace and under the name of Sañ-wa Ñanpo daily offered oblations to them. In consequence of such a rare instance of good fortune, the king retained his youthful vigour even at the advanced age of fourscore and ten. He died in the year 561 A. D. at the age of 120, after a prosperous reign of fully a century. He too bore the appellation of Tsan to his name like his five predecessors. King Lha-thothori married the Princess No-Ssa-mañ-po-Jo of whom king Thi-Nan-Ssañ-tsan was born. The latter married the Princess of Broñ of whom Bro-Ñan-Dehu was born. Bro-Ñan was married to the princess of Chhin named Lu-gyal who gave birth to a blind child.

---

[26] Various authors give different dates regarding the birth of this monarch. The chronology adopted by me tallies with facts. Ñan-tsan was his real name, Lha thothori was the name of the place where he was born. In Tibet all great personages are called after the name of their birth places; for instance the great reformer of Tibet Lo-Ssañ tag-pa is called TsoñKhapa from TsoñKha his native place. Tsoñ means onion, Kha a bank.

[27] Kúntu Ssañ-po is also the name of the supreme god of the Bon religion.

This son of Bro Ñan Dehu was disqualified from ascending the throne on account of his blindness. As there was no other heir, nor any possibility of the queen giving birth to a second son, the blind boy after a short interregnum was placed on the throne. At his coronation, the sacred treasures called Ñanpo Sañwa were worshipped, by virtue of which the blind king regained his sight. The first object that he saw being a Ñan (or wild sheep) running on the Tagri hill near Lhasa, he was given the name of Tagri Ñan Ssig (the seer of ovis ammon on the Tagri hills). He married Hol-goñ Ssañ, and was succeeded by his son Nam-ri-Sroñ-tsan. It was during the reign of this king, that the Tibetans got their first knowledge of arithmetic and medicine from China. The prosperity and the cattle-wealth of the country was so great during this period that the king built his palace with cement moistened with the milk of the cow and the yak. Once riding his fiery and quick-footed steed, named Dovañ-Chañ, which he had obtained from the banks of lake Brag-sum Diñma (a small lake north of Lhasa, not more than 20 miles round), he arrived at the northern desert plain where he slew a fierce Doñ (wild yak) with terrible horns called Thal-Kar-ro-riñ. Then, while riding fast, the carcase of the yak, which he had bound with the straps of his saddle, fell down on the ground. In order to take it up, the king alighted from his horse, when he found himself on an extensive salt bank. This was the inexhaustible mine called Chyañ-gi-tshva[28] which still supplies the greater portion of Tibet with salt. Before the discovery of this salt mine, there was a very scanty supply of salt in Tibet. The king married Bri-thoñ-Kar, the princess of Tshe-Poñ, by whom he got his only son. The powerful Namri-Sroñ-tsan died in the year 630 A. D., leaving the throne to his son, the illustrious Sroñ-tsan Gampo, with whom opens a new era in the History of Tibet.

---

[28] བྱང་གི་ཚྭ་ཆེན་པོ་

CHAPTER II.

MONARCHY (600 A. D.—730 A. D.)

(Buddhist period.)

Sroṅ-tsan-Gampo was born A. D. 600-617.[29] On the crown of his head there was an excrescence believed to be a symbolic representation of Buddha Amitábha. Although it was very bright and full of lustre, yet he used to cover it with a red satin head-band. At the age of thirteen he ascended the throne. During this period were discovered, in certain caverns of rocks and recesses of mountains, many self-created images of Chenréssig,[30] the divine mother Tárá, Hayagríva and other gods, besides many inscriptions including the six mystic syllables "Om-mani-padme-huṃ."

The king visited these images and made oblations to them with his own hands. With the help of his subjects he built a lofty nine-storied palace on the top of the hill, where Potálá now stands built out of its ruins. He had immense armies, besides innumerable reserve troops of spirits over whom by force of his charms he had great command. The fame of the wisdom and martial valour of this double-headed prince, as he was called from the excrescence over his head, reached the border countries, whose sovereigns sent ambassadors to his court with letters and rich presents. He returned their kindness in a way that was most becoming in a sovereign of his rank. While yet very young, Sroṅ-tsan Gampo evinced great intelligence and sagacity in dealing with his dependent princes and improving friendship with independent potentates. Although there was no such thing as a written language in Tibet, even at so late a period as this, yet Sroṅ-tsan managed to communicate with the foreign kings in their own languages. He had learnt many of the border languages, which helped him in conducting conversation with the Indian and Chinese ambassadors. He acquired a fair knowledge of the Sanskrit, Palpa (Newari) and Chinese. These rare qualifications, and especially his inclination towards Buddhism, made people believe him to be an incarnation of some divinity. He extended his conquests to the surrounding countries, and brought the neighbouring princes under subjection. As soon as he got clear of all military difficulties, he devoted his attention to the propagation of Buddhism in Tibet. He clearly saw that a written language was most essential to the establishment of religion, and more particularly to the institution of laws for the good of the people, and that as long as this all important want remained unsupplied, no success in either could be ensured. He, therefore, sent Sambhoṭa, son of Anu, with sixteen companions, to study carefully the Sanskrit language and thereby obtain access to the sacred literature of the Indian Buddhists. He also instructed them to devise means for the invention of a written language for Tibet by adapting the Sanskrit alphabet to the phonetic peculiarities of the Tibetan dialect. He furnished the members of the mission with a large quantity of gold to make presents to their Indian professors. They safely reached their destination in Áryávarta, where, under the Buddhist sage Livikara, Sambhoṭa acquired a thorough knowledge of the Sanskrit and of sixty-four different characters known in the Árya land. Under Pandit Devavid Siṃha they learnt the Kalápa, Chandra and Sárasvata grammars of the Sanskrit language. They also mastered the twenty-one treatises of aphorisms and mysticism of the Buddhist creed. After returning to Tibet, they propitiated Manjuśrí the god of learning, and framed the system of Tibetan characters, *viz.*, the U-chan or "letters provided with heads" (mátras) adapted from the Devanágarí, and the U-me or "headless" from the Wartu, and thus introduced a copious system of written language into Tibet. They composed the great grammatical work called SumChu dag-yig. The king ordered the intelligent class of people to be taught the art of reading and writing, and many Sanskrit Buddhist books to be translated into Tibetan, and thus he laid the foundation of Buddhism in Tibet. He then required all his subjects by royal edicts, to observe the ten virtues besides the following sixteen moral virtues:

---

[29] Tibetan historians do not agree in their accounts of the exact date of this sovereign's birth, but their dates range between 600 to 617 A. D. He is the avowed incarnation of Chen-re-ssig.

[30] སྤྱན་རས་གཟིགས་ *s*pyan-ra*s* *g*Ssig*s* or Avalokiteśvara.

(1.) To have faith in KonChhog (god) (དཀོན་མཆོག).
(2.) The performance of religious observances and study.
(3.) To honour one's parents.
(4.) To respect the meritorious and to promote the talented.
(5.) To honour the elders as well as those who are of high birth, &c.
(6.) To pay attention to relatives and friends.
(7.) To be patriotic and useful to one's own country.
(8.) To be honest and upright.
(9.) To know the good use of food and wealth.
(10.) To follow the example of the good.
(11.) To be grateful and return the kindness of benefactors.
(12.) To use just weights and measures.
(13.) To be free from jealousy by establishing concord and harmony with all.
(14.) Not to listen to the words of women.
(15.) To be gentle and polite in speech and acquire skill in conversation.
(16.) To bear sufferings and distress with patience and meekness.

By inculcating these sixteen moral virtues, he greatly promoted the present and future well-being and happiness of his subjects. From the seashore of southern India he procured for himself a self-created image of Chenressig with eleven faces made of Nága-sára sandal wood. He married a Nepálí Princess, the daughter of Jyoti-Varma king of Nepál, who brought him seven precious dowers, the images of Akshobhya and Maitreya and a sandal-image of Tárá, the gem named Ratnadeva, a mendicant's platter made of lapis-lazuli or Vaidúrya. Then, hearing the report of the extraordinary beauty of the Princess Ḥuṅ-shiṅ Kuṅ-jú the daughter of Seṅgé-tsanpo or the Lion King (Chinese Thai-Tsung[31]) of China, he sent his celebrated Prime Minister Gar with a hundred officers to China. After repeated negotiations the proposal was agreed to. Many stories are recorded in connection with this marriage of which I here give one. As the number of candidates for the princess's hand was very great, the king, unable to decide whom to choose or whom to reject, at last declared that he should bestow the princess on that prince whose minister by dint of sharpness of sense and quickness of understanding would stand first in merit and intelligence. In the first ordeal, the king laid before the assembled ministers a buckler constructed of a coil of turquoise, with one end terminating in the centre and the other at the edge. He required them to pass a string through the aperture of the coil from one end to the other. It was a great puzzle to all except to the shrewd Tibetan minister Gar, who tying one end of a thread to the narrow waist of a queen ant, gently blew it forward through the coil. The ant, dragging the thread easily, came out at the other end to the great wonder of all. The king, not liking to send his favourite daughter to such a distant and barbarous country as Tibet, devised repeated trials in all of which the cunning minister acquitted himself well. The reluctance of the king was at last overcome by various contrivances, and he at last determined to decide the fate of his daughter finally. He ordered 500 handsome girls of the princess's age to be dressed in the same kind of apparel as his daughter, and exhibited them before the assembled ambassadors along with the princess herself. The shrewd Tibetan, never wanting in resources, had studied the countenance of the princess; moreover being secretly informed of the king's design, he had taken some hints about the identification of the princess from an old nurse in the royal household. By these means, the Minister Gar at once recognized the real princess, and gently pulling the edge of her robe, he claimed her for his liege lord. The

[31] King Thai-Tsung one of the most illustrious sovereigns of China, was the son of Lyyean the founder of the Tang dynasty of China A. D. 622. Thai-Tsung ascended the throne abdicated by his father in his favour in the year 625, when Sroṅ-tsan was reigning on the throne of (Yum-bu Lagaṅ) Tibet.

trials ended here. When it was fully settled that the princess should go to Tibet, she addressed the king, " Sire, as it has pleased your Imperial Majesty to send me to Bod, a country where there is no religion, I pray that you will allow me to take with me the great image of Buddha, and several volumes of Buddhist scriptures, besides a few treatises on medicine and astrology." The king accordingly granted her prayer and gave them as parts of her dowry. Hearing that Tibet was a very poor country, he sent with the princess heaps of gold and silver for her use in Tibet. The union of the incarnation of Chenressig in Sroñ-tsan, and of the two incarnations of the divine mothers (Tárá) in the persons of the two princesses produced great joy and happiness in the palace of Yumbu-lagañ. The two princesses, come from two great centres of Buddhism, *viz.*, China and Nepál, jointly exerted their influence for the propagation of Buddhism. First of all they converted the king whose inclination to it was so remarkably manifested in his adopting the moral tenets obtained by Thon-mi Sambhoṭa from India. The country of Tibet being situated in the centre of the four great continents, like the heaving breast of a Srin-mo,[32] the king thought of making it the fountain of religion by filling it with monasteries. He erected one hundred and eight temples—four in the suburbs of his capital, four in its centre, four at the four corners of his kingdom, and so on. At the age of twenty-three he erected the two great temples called Rimochhe and Lhasa Prul nañ ki Tsug-la khañ[33] and dedicated them to the two images of Akshobhya and S'ákya respectively. Thus in the year 639 A. D. king Sroñ-tsan Gampo founded Lhasa the renowned capital of Tibet. The hill called Chagpori being considered as the heart of the country, the king erected his new palace upon it. At the age of twenty-five he sent his ministers to North China to erect 108 chapels at Re-vo-tse-ña, the chosen residence of Manjuśrí towards the north of Pekin. He invited the great Pandits Kusara and S'ankara Bráhmaṇa from India, Pandit S'ila Manju from Nepál and Hwa-Shañ Mahá-tshe from China, Sambhoṭa, Lha-luñ dorje pal and other translators, for the great work of translation of the Buddhist scriptures from the Sanskrit and Chinese originals, in the newly formed written language of Tibet. The king had no children by the two princesses, in consequence of which he was obliged to marry two more princesses from Ru-yoñ and Moñ, named Je-Thi kar and Thi-Cham. The latter gave birth to a prince named Guñ-ri-guñ-tsan, and the former to Mañ-Sroñ Mañ-tsan. When Guñri reached the thirteenth year of his age, the king abdicating the throne in his favour, retired into solitude to pass his days in meditation, but unfortunately the prince died at the age of eighteen when

---

[32] Amazonian woman.

[33] ལྷ་ས་གཙུག་ལག་ཁང་ Lhasa the temple of gods from which the capital of Tibet derived its name Lhasa, and *g*Tsuglag-Khañ is Kutágára or a shrine.

Sroñ-tsan was obliged to resume royalty. This latter period of his reign he signalized by his devotion to Buddhism. He constructed many religious edifices and sacred images, and organized a regular service by translating books on rites and ceremonies. At an advanced age he passed away from this world to be absorbed, says the Tibetan historian, in the Dharma Káya (spirit) of the merciful Chen-re-ssig. His two beloved wives, the princesses of China and Nepál, who had strenuously supported him in the cause of religion, also left this worldly existence at the same time to accompany him to Tushita the abode of joy. During the reign of this celebrated monarch there was no such institution as that of an ordained priesthood. History is not clear about it. Notwithstanding this, he succeeded in instructing his subjects in the ritualism of Hayagríva, S'in-Je-S'e-(Yama). He concealed his will together with precious treasures for the use of remote posterity. He was a second time succeeded by his son Mañ-sroñ-mañ-tsan. Shortly after his son's accession the king of China, hearing that the incarnate monarch of Tibet was dead, sent a large army to invade Tibet. The Chinese soldiers were defeated by the Tibetans near Lhasa. With a view to take revenge on the Chinese king, the young king of Tibet assembled one hundred thousand Tibetan soldiers and sent them to invade China under the command of the veteran General Gar. In this audacious attempt the Tibetans were repulsed, and the old General perished in fight. Afterwards an immense Chinese army rushed upon Tibet with great uproar; in consequence of which the Tibetans were struck with panic. They concealed the gold image of S'ákya, brought by the Chinese princess, in the southern niches of the great temple near the gate called Meloñchan, and deserted Lhasa. Soon after, the Chinese army occupied the city and demolished the palace of Yumbu lagañ by setting it on fire. They succeeded in carrying Akshobhya's image to some distance, but on account of its unwieldiness they left it behind after a morning's march. King Mañ-sroñ died at the early age of 27. He was succeeded by his son Du-Sroñ-mañpo who was young when placed on the vacant throne. The reign of this king was made remarkable by the appearance of seven heroes.[34]

---

[34] (1) *r*Ñog-riñla-nagpo raised a young elephant by its head.

(2) *r*Ñog-liñ-gam carried a yak on his back.

(3) (4) *g*Non-*r*Gyal-*m*tshan and *l*Vas-*r*god-*l*doñ-*b*tsan were experts in archery. The former could shoot his arrow to three times the eyes' ken, and the former could cut a flying hawk into two from below.

(5) *h*Gos-*s*yag-chhuñ could whirl round a stag's skin filled with sand.

(6) Chagro-*ḥ*broñ-shor chased a *ḥ*broñ or Doñ (wild yak) with awful speed on a steep precipice.

(7) *g*Non-Khri-*g*yu-*s*pyin ran his horse down a steep descent.

What these heroes achieved for the state the Gyal-rab or the Debther Ñonpo does not relate. Du-sroñ mañpo was succeeded by his son Me-Ag-tshom[35] born of his wife Chhim-ssáh.

This king discovered an inscription on copper of his illustrious grandfather, king Sroñ-tsan-Gampo, which contained the prophecy that in the fifth generation under the auspices of his great-grandson, bearing the surname of Dé, the Buddhist religion would greatly flourish. The king, believing himself to be the person alluded to, sent messengers to invite the two Indian Pandits, Buddha Guhya and Buddha S'ánti, who were then residing near the Kailása mountain. But they declined the offer. The messengers, unsuccessful in their mission, returned to Lhasa, having committed to memory five volumes of the Maháyána Sútránta, which they subsequently reproduced in their own language. The king erected five temples in five different places,[36] and deposited one book in each. Besides these, he is also said to have erected other temples.

He obtained the volume of Buddhist scripture called Ser-ḥod-tampa from the province of Kuñ-shi in China, besides a few treatises on medicine, all of which he ordered to be translated into Tibetan. He invited several monks from Li-yul,[37] with a view to introduce monkhood into Tibet, but failed, as nobody would come forward to take the vows of monkhood. He found the largest turquoise then known in the world, on the top of Tag-tse.[38] He married Thi-tsun, the princess of the Jañ country by whom he had a son Jañtsha Lhapon. Queen Thi-tsuñ also bore the name of Nam-nañ. Prince Jañtsha Lha was famous for the extraordinary beauty of his person. His father sent ambassadors all over Tibet to find a match for him, but they all returned without success. At last he sent an ambassador to China, to propose a marriage between his son and the accomplished princess Kyim-shañ Kúñ-jú,[39] the daughter of the Emperor Wai-júñ. The princess hearing the account of the extraordinary beauty of the Tibetan prince, prayed to her father to consent to the marriage, to which he at last acceded; and the princess started for Tibet. In the meantime one of the Tibetan chiefs named Thi-ssáñ, the chief of Ñag, being offended with the king for not selecting his daughter for the prince's wife, treacherously murdered the prince. King Ag-tshom, therefore, at once despatched messengers to convey the melancholy news to the princess who was on her way to Tibet. The princess, deeply disappointed, did not like to return to China, but taking a fancy to see the snowy country of Tibet, and more especially the celebrated image of S'ákya, continued her journey to Tibet, where she was warmly welcomed by king Ag-tshom. She brought to light the hidden image of Akshobhya which during three generations had received no offerings, having been concealed under the gate Meloñchan. Her beauty so much charmed the king that he at once proposed to marry her. The princess at first declined, but after long deliberaation she yielded, and to the great wonder and joy of the people the betrothed daughter-in-law became the bride of the father. She gave birth to the famous monarch Thi-sroñ-de-tsan (Khri-Sroñ-*l*de*u*-*b*tsan), believed to be the incarnation of Manju S'ri, the god of wisdom and learning.

---

[35] Ag-tshom*s* means beard, hence this king was called the shaggy king.

[36] The following are the names of the places and of the temples erected in them.

(1) Brag-*d*Mar-Keru.
(2) *g*Sañ-*m*Khar-brag.
(3) *m*Chhun*s*-phu-*s*na-ral.
(4) Masa goñ-gi-sha-khar.
(5) Brag-*m*grin-*b*Ssáñ.

[37] Li-yul is identified with Nepal by the translators of Kahgyur. I have been able to ascertain that the ancient name of Nepal in Tibetan was Li-yul. Palpo is the modern name for the monastery of Palpa. Alex. Csoma identifies Li-yul with S. E. Mongolia.

[38] A hill a few miles north of Lhasa.

[39] I am not aware whether Kuñju is a Chinese word, but the Tibetans address all Chinese princesses by the title of Kuñju. Hence it appears to have the same import as kumári in Sanskrit or princess in English.

CHAPTER III.

THI-SROÑ-DE-TSAN. (730—33 A. D. to 866 A. D.)[40]

This monarch, the most illustrious in the Buddhist annals of Tibet, was born, according to the Chronologist Buton, in the year 730 A. D. When he was in the womb, his mother saw in a vision that a saintly prince would be born of her. She, therefore, kept aloof from all sorts of defilement and unholy things, in consequence of which she remained happy and cheerful. During this time the old queen Nam-nañ, jealous of Queen Kuñju, feigned pregnancy, by wrapping a cubit's length of cotton rag every day round her belly. Then, when the Chinese Princess' time for delivery came, Nam-nañ induced one of her midwives to give her a kind of anæsthetic liquor, through which Kuñju became insensible and soon gave birth to a son, which the wicked Nam-nañ, by bribing the princess' maid, caused to be removed to her chamber, replacing it by a female child born on the same day of low parentage. As soon as she recovered her senses, Kuñju was surprised to see a daughter instead of a son, about whom she had seen so many things in her dreams. Meanwhile, the report of Queen Nam-nañ's giving birth to a son reached the king and his ministers, who all came to witness the blessed child. Queen Kuñju, who was not talked of at all, strongly suspecting

[40] ཁྲི་སྲོང་ལྡེའུ་བཙན་ KHRI-SROÑ-*l*DEU-*b*TSAN.

her jealous partner, but, in the absence of witnesses, being unable to charge Nam-nañ with any foul motive, kept her sorrows to herself. Some of the ministers, who knew the plot of the elder queen, did not venture to speak against her. Kuñju, however, once complained to the king about the probable wickedness, but as Nam-nañ had by the agency of some drug produced milk in her paps, Kuñju did not see the possibility of establishing her accusation, but burning with a spirit of revenge tried to bring damnation on Tibet by means of her incantations, and wrote treatises construing astrology in a perverse way. In the third year of the prince's age, the king invited the maternal relations of the prince and the princess to a grand festive celebration.[41] When all the nobles, chiefs and ministers of the realm had assembled, the king seated the prince and the princess on either side and taking a cupful of wine in his hand, addressed the former—"My son, take this gold cup of wine and with your tender hands offer it to him who is your maternal uncle." To the utter amazement of all present, the prince at once presented it to the Chinese prince whom he thus addressed—"I, Thi-sroñ-de-tsan am thy nephew. Nam-nañ is not my mother, though she has nursed me for a period of three years. I now meet my uncle, and my heart rejoices to behold him." These words of the infant prince struck all the courtiers and ministers with wonder. Nam-nañ's wickedness was now at last revealed, and she was overwhelmed with shame. Kuñju was transported with joy when the king presented the child to her, and now exerted herself to avert some of the evils she had brought on Tibet by her incantations; but as she did not fully succeed in correcting astrology, it is alleged by several native historians that the Tibetans cannot make correct calculations.

A. D. 743—748. At the age of sixty-three the king died leaving the throne to the young prince, now thirteen years old. Thi-sroñ applied himself to study and the critical examination of the ancient records contained in the Archives of the State. His ministers were divided into two factions, designated the "Buddhist" and the "Heretic" ministers. The first faction, or Chhoi-lon, advised the young king to encourage Buddhism, while their antagonists exhorted him to extirpate Buddhism from Tibet, which according to them had been productive of pernicious consequences. In spite of the opposition, the king, having a great inclination for Buddhism, sided with the former. The Buddhist party now, with the king's connivance, entered into a conspiracy against the life of Mashañ the prime-minister. They bribed the soothsayers and astrologers to declare that some great calamity was imminent over the king which could be only averted by two of the high officers of State entering grave-like cells and remaining there for a period of three months. The king, therefore, offered large presents to those who would undergo this self-sacrifice. The minister Mashañ volunteered to do so, and was followed by Go*s* the Buddhist minister. They both entered the cell, the depth of which was three times a man's length. At midnight, Go*s*'s friends threw a rope into the grave, by means of which he climbed up and escaped. The unfortunate Mashañ was left alone there, to realize the horrors of the grave. His mortal enemies, the "Buddhist Ministers", blocked the mouth of the grave with a huge rock and buried him alive. As soon as the king came of age, he invited the Indian Sage S'ánta Rakshita and Pandit Padma Sambhava from Udyayana to fill the whole country of Tibet with the blessings of the Buddhist religion. They suppressed the eight kinds of demons, nymphs, and evil spirits. With the munificent assistance of the king, Padma Sambhava founded the great monastery of Samye (*b*Samye*s*). They also translated many works on Sútra (or aphorisms) and Tantra. They constructed innumerable religious symbols, such as images of Buddhas and saints and chhortens (chaitya), and concealed many sacred treasures for the benefit of future generations. During the reign of this king a Chinese sage named Hwashañ Maháyána arrived in Tibet and, by interpreting in a strange way the theories of Buddhism, converted the ignorant classes of men to his tenets. The king, harbouring great doubts as to the correctness of Hwashañ's theories, invited Pandit Kamalaśila from India to expose his fallacies. Kamalaśila held long controversies with Hwashañ and in the end defeated him. The king put down the Bon religion and persecuted all unbelievers in Buddhism. He enforced clerical laws and instituted codes of civil and criminal justice for the good government of his people. His statutes were written on large tablets and proclaimed all over the country. He had several wives, among whom Tshe-poñ-Ssáh was his favourite, by whom he had three sons. After a prosperous reign of 46 years, at the age of 59, he passed away from the abodes of men. He left three sons, of whom the eldest Muni-tsanpo succeeded him on the throne.

---

[41] The Tibetans celebrate the aniversary of their birth.

During the infancy of Muni-tsanpo the state affairs were conducted in his name by his pious ministers. He commenced his independent reign with a generous determination of raising all his subjects to the same level. He ruled that there should be no distinction between poor and rich, humble and great. He compelled the wealthy to share their riches with the indigent and helpless, and to make them their equal in all the comforts and conditions of life. Thrice he tried this experiment, but every time he found that the poor returned to their former condition; the rich becoming richer still, and the poor, by growing more indolent and wretched, turning poorer still. The Pandits and Lochava attributed this curious phenomenon to the consequence of the good and evil acts of their former births. For the enlightened and humane beginning of his reign Muni-tsanpo was greatly loved by his people.

He made large offerings to the great monastery of Samye and distributed alms to the indigent and helpless. But before a year and nine months had passed after this demonstration of devotion to the monastery, the promising king was poisoned by his mother, who perpetrated this foul act to place her youngest son on the throne. The second son Murug-tsanpo's accession to the throne being considered inauspicious by the astrologers and soothsayers, the youngest son Mutig-tsanpo, a boy eight or nine years old, received the crown. He is said to have miraculously received his lesson in sacred literature from the venerable Padma Sambhava He ordered translations to be made from Sanskrit books of Buddhism, and built the temple of Dorje Vyiñ at Gyal-de-kar-chuñ. After a long and prosperous reign, in which he strenuously exerted himself to promote the welfare and happiness of his people, he died at a good old age, leaving five sons, *viz.*, Tsañ-ma, Lha-je, Lhun-dub, Lañ-darma and Ralpachan. The first two of these seem to have reigned, if they reigned at all, for a few years, having fallen victims to the intrigues of the Buddhist ministers. The youngest Ralpachan, even from his childhood, gave excellent proofs of his intelligence and ability. His assiduity and aptitude for learning were very great. At the age of eighteen, he was raised to the throne by the Buddhist ministers of State who were very powerful, the opposition being nearly extinct through the continued and rigorous persecution of the late kings.

CHAPTER IV.

RALPACHAN. 846-60 A. D.

This celebrated sovereign was born between 846 and 860 A. D. Immediately after his accession he sent offerings to the different temples built by his ancestors. He built a new nine-storeyed temple, of which the three lower storeys were of stone, the three middle of brick, and the topmost three of wood. In the upper floors he kept Buddhist scriptures, images, and model chhorten (shrines). In the middle floors he accommodated the Pandits and translators of the holy writs, and the ground floors he reserved for the use of his court and state affairs. Although his ancestors had obtained many translations of Sanskrit works, yet not satisfied with them, he obtained fresh manuscripts from Magadha, Ujjayaní, Nepál and China. Some of the ancient Sanskrit works being irregularly and inaccurately translated into the Tibetan language, which was still very imperfect, he invited the Indian professors of Sanskrit, such as Jina Mitra, S'urendra Bodhi, S'ílendra Bodhi, Dána S'íla and Bodhi Mitra to conduct the great work of translation. These great scholars, with the assistance of the Tibetan professors, named Ratna Rakshita, Manjuśrí-Varma, Dharma-

Rakshita, Jina Sena, Ratnendra S'ila, Jaya-Rakshita, Kawapal-tseg (Kava*d*pal *b*tsegṣ), Chodo-gyal-tshan (Chogro *r*Gyal-*m*tshan) and others, revised the anciently translated books, translated fresh manuscripts, finished those that were left unfinished, and simplified the abstruse and intricate portions of the Scriptures.

Ralpachan introduced standard weights and measures similar to those used in China, and thereby prevented fraudulent practices in commercial dealings. He enforced the canonical regulation of India for the discipline and guidance of the clergy, and commanded his lay people to follow the statutes as promulgated by his illustrious predecessors. Thinking that the propagation of religion depended much upon the predominance of the clergy, he organized many classes of priesthood. To each monk he assigned a small revenue derived from five tenants. His devotion to the priestly congregation was so great that he offered his own *Ralpa* or flowing locks to be turned into carpet-seats for the use of the Lamas. During the reign of this great monarch, there arose a dispute between Tibet and China. Ralpachan sent a powerful army to invade China. Province after province of the celestial empire fell before his victorious arms and was annexed to Tibet. When the generals and champions of the contending nations had been slain in great numbers, the Hwashañ[42] and Lopan[43] interceded to put a stop to further bloodshed between the two monarchs, who were related to each other by ties of blood as uncle and nephew. A treaty was agreed upon. At a place called Gúñgú-Meru the boundary of the two kingdoms was fixed, and stone obelisks and pillars were erected as boundary pillars, on which the terms of treaty between the belligerents were inscribed. It was agreed that the armies of neither kingdom should ever cross the boundaries marked, nor on any pretext encroach on each others territories. All differences being settled, the nephew and the uncle became friends. They also solemnly promised not to violate the conditions of the treaty. As living testimonies to their engagements, inscriptions were written on Doriñ, or high stone obelisks, erected at Lhasa, at the palace of Gya-Gyal and at Gúñgú-Meru. From this time, perfect amity existed between the two nations, China and Tibet, on earth, says Debther-ñonpo, as between the sun and moon in heaven. King Ralpachan's reign was celebrated also for the good administration of justice. He punished the wicked and rewarded the good. He suppressed the powerful and protected the weak. But by attempting to enforce the strict observance of the clerical and the kingly laws, he gave umbrage to the corrupt and sinful ministers. When, unfortunately for the king, their power increased by the death of a few pious Buddhist ministers, two ruffians who had an old grudge against the king assassinated him by twisting his face towards the back, at the instigation of his brother. This was Lañdarma, whose claims to the throne were set aside by the "pious" ministers, and who is said to have been at the bottom of this foul plot. After the assassination of Ralpachan at the age of forty eight, between 908 and 914 A. D., Lañdarma ascended the throne. The celebrated historiographer Buton assigns this event to the first part of the ninth century, in his chronology.

---

[42] The Buddhist monks of the first class in China are called Hwashañ.

[43] The Lochavas and Pandits of Tibet are by abbreviation called Lo-pan.

LAÑDARMA.

The last and perhaps the worst of the Tibetan monarchs, Lañdarma, commenced his reign by persecuting the Buddhists whom he considered his mortal enemies. He was joined in his wicked plans of persecution by his prime minister Batagna (*sBas-stag-snas.*) He reviled the first Chinese Princess Húnshiñ-Kúñjú[44] as an evil goblin (a yakshiṇí) who had brought the image of S'ákya Muni into Tibet. "It was for that inauspicious image", said he, "that the Tibetan kings were short-lived, the country infested with maladies, subjected to unusual hoar-frost and hail storms, and often visited by famines and wars". "When this image", continued he, "was being brought from the top of Rirab (Sumeru mountain), the gods were vanquished in a war with the demons. S'ákya's accession to power, first in India and afterwards in China, made the people unhappy and poor, by the demoralizing effect of his wicked teachings". To slander Buddha in such blasphemous language was his great delight, and in no discourse did he indulge himself so much as in reviling that holiest of holies. To avoid disgrace, the Pandits and Lochava fled from Tibet. Those who failed to run away were robbed and oppressed. He obliged some of the monks to be householders, others he sent to the hills to hunt wild animals for him. He destroyed most of the Buddhist works. Some he threw into water, some he burnt, and some he hid under rocks. Not satisfied with demolishing the temples and monasteries of the country, he wreaked vengeance even on the sacred shrines of Akshobhya and S'ákya. He tried to throw those two images into water, but some of his "pious" ministers having represented to him the difficulty of lifting those heavy things, he contented himself by sinking them in sand. When he was told that the image of Maitreya was very sacred, he broke into loud laughter. When he was just going to break down Lhasa (the temple of S'ákya), Rimochhe (temple of Akshobhya) and Samye, he was told that the guardian demons of those places would send plague and ruin upon him if he destroyed the temples. Being afraid of exciting the wrath of those dreaded spirits, he spared their charges, and contented himself with closing up their doors, by erecting mud walls. His ministers and flatterers, in order to please him, painted those walls with abominable pictures illustrative of the drunken and lustful moods of human depravity. When Lañdarma was thus engaged in overthrowing the sacred religion as well as its relics, the saint Lhaluñ-pal Dorje, while sitting in deep contemplation in the cavern of Yarpa-lhari mountain, saw a vision. The goddess Paldan Lhamo descending from heaven appeared before him and exhorted him in the following terms: "Oh saint, in these days there are none so powerful as thou. Wouldst thou deliver the country from the hands of that sinful tyrant Lañdarma?" In the morning the saint inquired of his servant the condition of Tibet, upon which he was told the cruelties practised by Lañdarma. He then mounted his white charger whose body he had besmeared with charcoal, and dressing himself in a black robe with white lining, with no other weapons than an arrow and a bow in his hands, he arrived at Lhasa.[45] While the king was reading the inscription on the stone obelisk called Doriñ, the saint, as he was making his salutations, shot an arrow at the king's back, which pierced right through his body; then exclaiming, "I am the demon Yá-sher, and this is the way of killing a sinful king," he sped away on his horse. As soon as the king fell, his ministers and attendants cried, "the king is dead, the king is dead," and the mob ran after the assassin, but the saint, urging his fleet companion, shot off like a meteor. In crossing a river the coal-black colour of the horse was washed away, and it became white as snow. He then turning his robe inside out so as to show the white, flew as the god Nam-théo-Karpo and escaped, leaving his pursuers far behind.

---

[44] Wife of King Sroñ-tsan-Gampo.

The king pulled the reeking arrow out with both his hands, and in the agonies of death, when his proud heart was subdued with anguish, exclaimed—"Why was I not killed three years back that I might not have committed so much sin and mischief, or three years hence, to enable me to root out Buddhism from the country," and died.

With Lañdarma ended the monarchy of Tibet founded by Ñaḥ Thi tsanpo, and his descendents henceforth ceased to exercise universal authority over the whole of Tibet. The sun of royalty was set, and there rose numerous petty princes to shine with faded lustre in the pale realm of snowy Tibet.

---

[45] The sleeves of the assassin saint were unusually broad to make room for the bow and arrow. The king stood encircled by his ministers when the saint arrived, dancing in frantic jumps. They all ran to witness his curious dance. The king called to him to come near. The saint approaching prostrated himself to salute the monarch. In the first prostration he set the arrow and bow right, in the second he fixed the arrow to the bow, and in the third killed the king with it. Hence the origin of the Lama war dance and the use of broad-sleeved robes by the Tibetan Lamas.

Genealogy of the Tibetan Monarchs.

(416 B. C.)

These seven kings are known by the name of *Nam-thi.*

ÑAH-THI-TSANPO (1)
married
Nam-múg-múg

Múg-thi-tsanpo (2)
married
Sa-diñ-diñ.

Din-thi-tsanpo (3)
married
So-tham-tham.

So-thi-tsanpo (4)
married
Dog-mer-mer.

Mer-thi-tsanpo (5)
married
Dag-Lhamo-Karmo.

Dag-thi-tsanpo (6)
married
Srib-Lhámo.

Srib-thi-tsanpo (7)
married
Sa-tsan-luñ-je.

These two are known by the name of *Per kyi diñ.*

Digum-tsanpo (8)
married
Lu-tsan-mer-cham.

The prime-minister usurped the throne and reigned for a few years.

son son

Chya-thi-gyal or (9)
Pu-de-guñ-gyal
married
Bom-thañ-mañ-ñah.

Esho-leg (10)
married
Mu-cham-Bramana.

De-sho-leg (11)
married

Lu-man-mer-mo.

These six kings are called *Sai leg* meaning the "excellent of the land."

Thi-sho-leg (12)
married
Tsan-mo-gur-man.

Guru-leg (13)
married
Tsho-man-doṅ-ma.

Doṅ-shi-leg (14)
married
Man-pu-mo.

Isho-leg (15)
married
Mu-cham-mad-leg.

These are well known by the surname of *Dé* which means the "commander" and corresponds to the Sanskrit word *Sena*.

Ssa-nam-ssin-de (16)
married
Tsho-man-thi-kar.

De-phrul-nam-shuṅ-tsan (17)
married
Se-ñan-maṅ-ma.

Senol-nam-de (18)
married
Lu-mo-mer-ma.

Senolpo-de (19)
married
Mo-tsho.

Denol-nam (20)
married
Thi-man-je na.

Denol-po (21)
married
Se-tsun-ñan-je,

De-gyal po (22)
married
Man-tsun-lug-goṅ.

De-tin-tsan (23)
married
Ñi-tsun-maṅ-ma-je.

These are called the *Tsan* meaning "king."

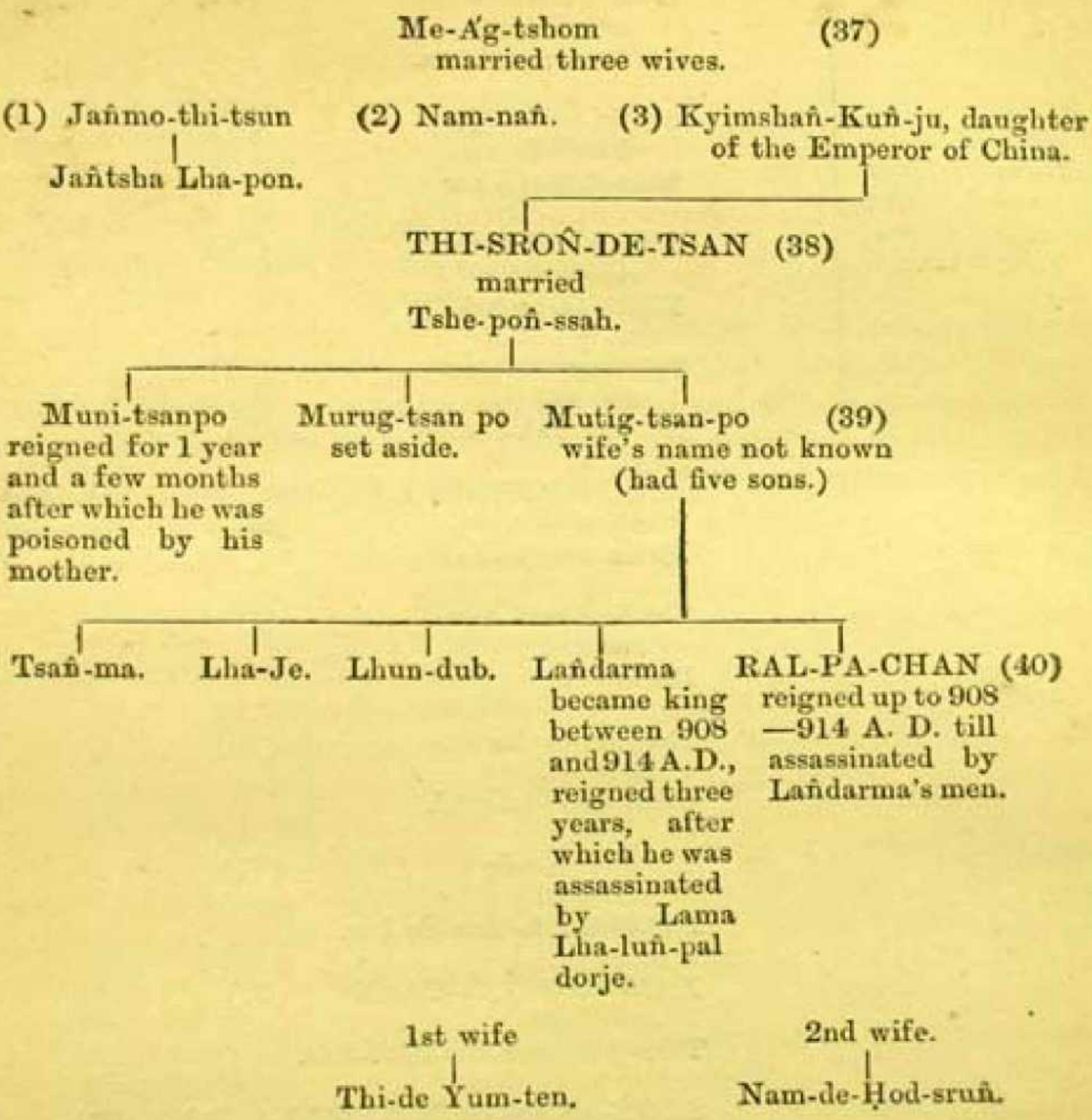
Gyal To-ri-loñ-tsan (24)
married
Di-tsun-chyañ-ma.
|
Su-thi-tsan-nam (25)
married
Man-Jah-thi-kar
|
Thi-dá-puñ-tsan (26)
married
Man-Jah-lu-teñ.
|
Thi-thog-Je-tsan (27)
married
Ru-yañ-Jah-toñ-gyal-namo-tsho.
|
LHA-THO-THO-RI-Ñan-tsan (441 A. D.) (28)
married
Na-so-mañpo-Je.
|
Thi-ñan-ssañ-tsan (29)
married
Broñ-mo.
|
Bro-ñan-de-hu (30)
married
Chhin-ssah-lu-gyal.
|
Tag-ri-ñan-ssig (31)
married
Hol-goñ-sañ-tsun-do-kar.
|
NAM-RI-SROÑ-TSAN (32)
married
Tsha-poñ-ssah-Bri-thoñ-kar.
|
SROÑ-TSAN-GAMPO (617 A. D.) (33)
married four wives.

(1) Nepalese princess Pal-ssah-thi.

(2) Chinese princess Huñ-shiñ Kuñ-ju.

(3) Tibetan princess of Moñ named Ssah-thi-cham.
|
Guñ-ri-guñ-tsan (34)
married
Je-thi-kar.
|
Dus-sroñ-nam-thul (36)
married
Chhim-ssah-tsan-mo.
|

(4) Princess of Ru-yoñ in Tibet.
|
Mañ-sroñ-man-tsan (35)
married
Do-ssah-thi-bo.



Me-Ág-tshom (37)
married three wives.

(1) Jañmo-thi-tsun
Jañtsha Lha-pon.

(2) Nam-nañ.

(3) Kyimshañ-Kuñ-ju, daughter of the Emperor of China.

THI-SROÑ-DE-TSAN (38)
married
Tshe-poñ-ssah.

Muni-tsanpo
reigned for 1 year and a few months after which he was poisoned by his mother.

Murug-tsan po
set aside.

Mutíg-tsan-po (39)
wife's name not known
(had five sons.)

Tsañ-ma.

Lha-Je.

Lhun-dub.

Lañdarma
became king between 908 and 914 A.D., reigned three years, after which he was assassinated by Lama Lha-luñ-pal dorje.

RAL-PA-CHAN (40)
reigned up to 908 —914 A. D. till assassinated by Lañdarma's men.

1st wife
Thi-de Yum-ten.

2nd wife.
Nam-de-Ḥod-sruñ.

PART II.

TIBET IN THE MIDDLE AGES.

CHAPTER I.

A. D. 917 TO 1270.

The wicked Lañdarma had two wives, the elder of whom, perceiving that her partner was in the family-way, shammed herself to be pregnant. At the time of the younger's delivery which took place at dusk, she clandestinely tried to kill, if possible, or steal away the new born child, but failed in her wicked design on account of the presence of a lamp light. The child was therefore given the name of Nam-de Ḥod Sruñ[46] or "one protected by light." The elder queen, to retrieve her failure, out of revenge, bought a beggar's child to whom she declared she had given birth on the previous evening. The Minister really wondered how she could have only yesterday, as she said, given birth to a child which had its teeth fully grown. But fearing to contradict the words of its mother, they gave it the name Thi-de Yumten[47] or "one upheld by his mother."

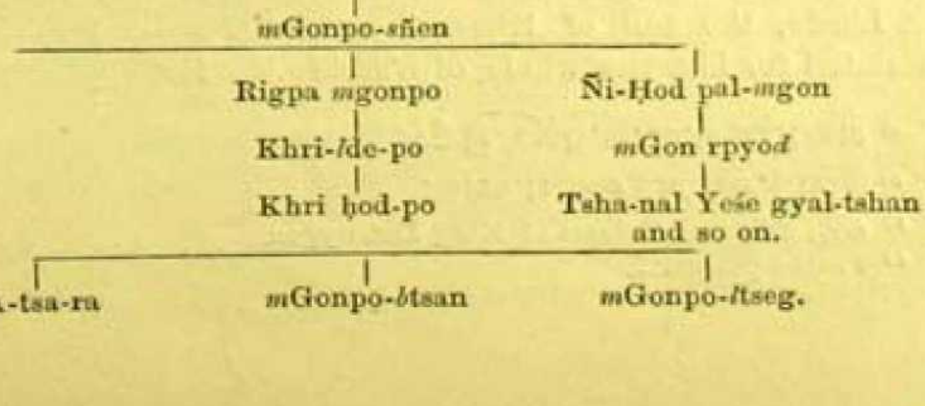
During the interregnum, the Buddhist Ministers directed the affairs of the state. They endeavoured to revive all the religious institutions that were nearly extinct. They reinstated the images in their former places and rebuilt the demolished monasteries and temples. Notwithstanding their feeble efforts to rebuild the edifice that had been ruthlessly pulled down by Lañdarma, Buddhism did not reach its former condition within seventy years from the death of Ralpachan. As soon as they came of age, the two sons of Lañdarma, quarrelled with each other for the possession of the throne. At last they divided the kingdom into two parts. Ḥodsruñ took possession of Western Tibet, and Yumten[48] of the

---

[46] གནམ་ལྡེ་འོད་སྲུང་

[47] ཁྲི་ལྡེ་ཡུམ་བརྟན་

[48] The following is the genealogical succession from Yumten—



Eastern Provinces. This unfortunate partition gave rise to incessant quarrels and disturbances, both the brothers constantly engaging in wars against each other.

Thus after the partition of the kingdom of Tibet, the descendants of N̄aḥ thi-tsanpo ceased to exercise universal sway over the country. They became weak and imbecile, in consequence of which they fell in the opinion and esteem of their subjects. Ḥodsruñ died at the age of 63 (980 A. D.) His son PalKhor-tsan[49], after reigning thirteen years, died at the age of 31 (993 A. D.). He left two sons, *viz.*, Thi Taśi Tsegpa-pal and Thi Kyi-de N̄imagon. The latter went to N̄aḥ-ri, of which he made himself master and founded the capital Purañ and built the fortress of N̄i-Ssúñ. He left three sons of whom the eldest Pal-gyi Derigpa-gon declared himself king of Mañ-yul; the second Taśi De-gon seized Purañ; and the youngest, named De-tsug-gon, became king of the province of Shañ-shuñ (modern Gugé). Detsug-gon left two sons, *viz.*, Khor-ré and Sroñ-ñe. The elder became a monk and changed his name to Yeśé-ḥod.

Taśi tsegpa,[50] who succeeded to the throne of his father, had three sons, Pal-de, Ḥod-dé, and Kyi-de.

This point of time is marked in the Tibetan History by the revival of Buddhism. Since the suppression of that religion by Lañdarma, no Indian Pandit had visited Tibet. After a long interval the learned Nepalese interpreter, called in Tibetan Leru-tse, invited the Pandits Thala-riñwa and Smṛiti to Tibet, but unfortunately after his death, which happened soon afterwards, his friends had to pass many years in privation as vagabonds in a foreign land. People took no heed of them. Smṛiti, in order to sustain life, betook himself to the occupation of a shepherd at Tanag. Afterwards becoming acquainted with the Tibetan language, he made his talents known. He visited Kham and conversed with the learned men of that place. He wrote a vocabulary of the Tibetan language which he called the "weapon of speech". The revival of Buddhism in Tibet dates from 1013 A. D. The royal monk Yeśé-ḥod[51] invited the celebrated Indian Pandit Dharmapála from Magadha, who arrived at his capital accompanied by three pupils, all of whom bore the surname of Pála. With their assistance the king encouraged the teaching of religion, arts, and especially vinayá.

Lhade, the son of Khor-ré invited Pandit Subhúti S'riśánti who translated for him the whole of S'erchin.[52] He appointed the illustrious translator Rinchhen Ssañpo as his chief priest. He left three sons, *viz.*, Ḥod-de, Shi-va-ḥod, and Chyañ Chhub-ḥod. The last acquired great proficiency both in Buddhism and in heretical philosophies, and was very much attached to the great translator. He became an illustrious personage in Tibet. Being greatly interested in the restoration of Buddhism to its former glory, he thought it urgently necessary to invite an eminent Indian Pandit who should be profoundly versed in all the S'ástras and particularly qualified in the three branches of Buddhism, *viz.*, theory, meditation,and practice of rites and observances, besides possessing a thorough acquaintance with the five Buddhist learnings. He sent emissaries to India to see if such a man was to be found in Áryavarta. Being informed by some of his ministers of the great fame of Lord Atiśa, the king became anxious to invite him into Tibet. Accordingly he equipped an expedition under the leadership of Nagtsho Lochava. He sent large quantities of gold and other valuable presents for this celebrated Pandit, in charge of his envoys. The party safely reached their destination, the city of Vikrama S'ilá, then the head-quarter of Buddhism in Áryavarta, where they obtained an audience with the ruling king called in Tibetan Gya-Tson-señge. After prostrating themselves, they laid their master's presents before Lord Atiśa, and related to him the history of the rise, progress and downfall of Buddhism in their mother country, and its recent revival therein. Under such circumstances, they represented, the cause of Dharma could not be promoted by any other Pandit than himself. They exhorted him to accept the invitation. The Lochavas became his pupils and waited upon him as his servants. At last after a long and careful consideration Atiśa consented. Having consulted his tutelary deities, and the divine mother Tárá, and believing that if he went to Tibet, he would render valuable service for the diffusion of Buddhism, more particularly because it was predicted of him that he would be of great service to a certain great Upásaka.[53] Although the journey would be beset with dangers to his life, yet the aim of that life being devotion to the cause of religion and the welfare of living beings, he quitted his monastery Vikrama S'ilá, for Tibet, in the year 1042 A. D. at the age of 59. Arrived in Ñaḥ-ri he took his residence in the great Lamasery of Tho-ding. He instructed the king in aphorisims and tantras. Then gradually he visited U' and Tsañ where he turned the wheel of Dharma (preached religion). He wrote many useful S'ástras, such as Lam Don (ལམ་སྒྲོན), "the lamp of the true way." He died at the age of 73, in 1055 A. D. During the reign of Tse-de, the son of Hod-dé, he assembled all the Lamas and monks of

---

[49] མངའ་བདག་དཔལ་འཁོར་བཙན་

[50] ཁྲི་བཀྲ་ཤིས་བརྩེགས་པ་དཔལ་

[51] *i. e.*, Khor-re, the son of King Detsuggon.

[52] Prajñá-páramitá.

---

[53] This was the celebrated Brom-tan-Gyalwai Juñne, who succeeded Atiśa in the Pontifical chair of Tibet.

U', Tsañ and Kham, and introduced, at a grand convocation, the method of calculating time by the system of cycles of 60 years, called Rab-Juñ, obtained from S'ambhala, a province in Northern India. He exhorted them to maintain the honour of Buddhism. During this period many learned translators, such as Ssañ Kaar Lochava, Rva Lochava, Ñan Lochava, Lodan S'erab, &c. were engaged in translating Sanskrit works (1205 A. D.). The sage Marpa, Mila Gonpo, and the famous Pandit S'ákya S'rí of Kashmir, besides many other Indian Pandits who furthered the cause of Buddhism, belong to the following century. In the reign of Tagpa-de, the ninth in descent from Tse-de,[54] was constructed an image of Maitreya Buddha, which cost him 12000 Dot-shad or a million and a half of rupees. He also prepared an image of Manju S'rí with seven "bré"[55] of gold dust. His son Asode was a greater devotee than himself. He annually sent offerings and presents to the Vajrásana at Buddha Gaya (Dorje-dan), which was continued even after his death. His grandson Ananmal prepared a complete set of the Kahgyur, written on golden tablets. Ananmal's son put the golden dome over the great temple of Buddha at Lhasa and constructed the image of the god at an immense cost. Ananmal's great-grandson was initiated into Buddhism by the Sakyapa Lamas and subsequently became king. A relation of the last king of this dynasty, named So-nam de (*b*Sod-nam*s* *l*de), accepted an invitation to become king, and under the title of Punya-mal held the government of Purañ.

The descendants of Palde (son of Taśi tseg pa) made themselves masters of Gúñ-thañ, Lugyalwa, Chyipa, Lha-tse, Lañ-luñ and Tsakor, where they severally ruled as petty chiefs. The descendants of Kyi-de spread themselves over the Mu, Jañ, Tanag, Ya-ru-lag and Gyal-tse districts, where they ruled as petty princes over their respective possessions. Hod-de left four sons, *viz.*, Phab-de-se, Thi-de, Thi-chhuñ[56] and Ñag-pa. The first and fourth became masters of Tsañ-roñ, the second son took possession of Amdo and Tsoñkha, the third son Thi-chhuñ became king of U′ and removed the capital to Yar-lúñ. The fifth descendant of Thi-chhuñ, named Jovo Nál-Jor, patronized the Lamas Chyen-ña rinpochhe and Pal Phagmo Du-pa. The seventh descendant S′akya-gon was a great patron of the celebrated Sakya Paṇḍita. The ninth descendant, named Tag-pa rinpochhe, accompanied the illustrious Phagpa on his visit to the Emperor of China and obtained Imperial patents. He built the palace of Tag-khai-Phodañ, and was well known for his veneration of the Buddhist congregation. He was succeeded by his son S′akya Gonpo II., who was a friend of Leg-gyal-tshan, another eminent translator of Sanskrit books. He added another monastery to the Yumbu-Lagañ palace.

---

[54] The following is the genealogical succession from Tse-de.

(1) *r*Tse-*l*de.
(2) *h*Bar-*l*de.
(3) *b*Kraśi*s*-*l*de.
(4) Bhané.
(5) Nága-déva.
(6) *b*Tsan-phyug.
(7) *b*Kraśi*s* *l*De.
(8) Grag*s*-*b*Tsan-*l*de.
(9) Grag*s*-pa-*l*de.
(10) Aso-*l*de.
(11) *h*J'e-dar-*r*mal.
(12) Anan-*r*mal.
(13) Rihu-*r*mal.
(14) Sang-ha-*r*mal.
(15) *h*Je-dar-*r*mal.
(16) 'A-*h*Jiñ-*r*mal.
(17) Kalan-*r*mal.
(18) Par-*b*tab-*r*mal with whom ended the line.

[55] A *Bré* is a kind of measure equal to a 10th fraction of the English bushel.

Tibet as a Dependency of Mongolia and China.

All the descendants of Thi-chhuñ with few exceptions were weak sovereigns. As soon as the great and mighty warrior Chhengis Khan came, the whole of Tibet without much resistance succumbed to his power in the beginning of the 13th century. The different chieftains and petty princes became his abject vassals. Jengis Khan, variously called Chheñgis Khan, Jeñgir-gyalpo or Thai-Dsuñ, was the son of a well-known Khalkha prince named Yé-phorga Bahdur, by his wife, the princess Húlan or Khulan. He was born according to Tibetan chronology in 1182 A. D. At the age of thirty-eight he ascended the throne of his ancestors, and during a warlike career unparalleled in history, which extended over twenty-three years, he conquered almost the whole of Asia, *viz.*, India, China and Tibet, &c., He died in the 61st year of his age, in the arms of his queen, leaving many sons, among whom Gogan was the most powerful, being the ruler of the eastern portion of his dominions. Gogan's two sons Godan and Goyúgan invited Sakya Paṇḍita to their court. From that event the abbots of Sakya monastery date a new era in the politics of Tibet, as well as in the religious belief of the blood-thirsty Mongols.

---

[56] The following is a genealogical table of Thi-Chhuñ (Khri Chhuñ):

Khrichhuñ
Hod-*s*kyid-*h*bar
*g*Yum-chan and 6 sons
Jo-*d*gah
Darma and others
Jovo-*r*nal-*h*byor
Jovo-*h*bag
S′akya-*m*gon
S′akya *b*Kraśi*s*
Grag*s*-pa-rinpochhe had four sons
S′akya-*m*gonpo II.
*r*Je-śakya-Rinchhen.

CHAPTER II.

SAKYA HIERARCHY,[57] 1270—1340 A. D.

The great Khublai,[58] first Mongol Emperor of China, invited to his court Sakya Paṇḍita's nephew Phagpa Lodoi Gyaltshan, who accordingly visited China in the 19th year of his age. On the first visit, the Emperor presented him with gold patents and seals, jewellery of gold and pearls, a crown studded with precious stones, an embroidered umbrella with a gold handle, a banner of cloth of gold, besides other presents in gold and silver ingots. Phagpa was appointed the Emperor's spiritual guide to teach him the truths of Buddhism. The Emperor, in return for his services, presented him with the possession of (1) Tibet proper, comprising the thirteen districts of U' and Tsañ, (2) Kham and (3) Amdo. From this time the Sakyapa Lamas became the universal rulers of Tibet. The illustrious Phagpa now became well-known by the name of Do-gon Phagpa. After a residence of twelve years in China with the Emperor, he returned to Sakya.

During his residence at Sakya, which extended over three years, he prepared fresh copies of the Kahgyur and Tangyur, all of which by his order, were written in gold. By extorting subscription from all his subjects of the thirteen districts,[59] he erected a lofty temple at Sakya. He also constructed a gigantic gold image of Buddha, a high chhorten of solid gold, and innumerable images of other materials, and distributed alms and food to one hundred thousand monks. At the invitation of the Emperor, he re-visited China. This time, too, he won the esteem of the Emperor, who loaded him with presents, honours and titles. He was decorated with the proud title of "Tisri." On his return he brought 300 *Bré* of gold, 3000 of silver, 12,000 satin robes and many other precious articles, such as imperial bounty could shower on him. Of all the Sakyapa Lamas, this was undoubtedly the most illustrious and fortunate. Under his successors, who for many years ruled the country, owing to the imbecility of the regents, the prosperity of the people was greatly impeded, chiefs and nobles fighting and quarrelling with each other. The Sakyapa hierarchs were mostly puppets in the hands of the regents. Among these regents very few deserve notice, and they all frequently embroiled the country in feuds, and themselves in war with each other. Quarrelling, not to speak of insubordination, was the order of the day. Conspiracy, assassination and murder were rampant everywhere.

---

[57] Genealogical table of the Sakyapa regents.

(1) S'akya *b*Ssañpo
Kun-gah-Ssañpo
(2) Shañ *b*tsun
(3) Ban-*d*karpo
(4) Chyañ-rin *bs*Kyo*s*pa
(5) Kun-*g*shan
(6) *g*Shañ-dvañ
(7) Chyañ-*r*dor

(7) Chyañ-*r*dor
(8) Añlen
(9) Leg*s*-pá*d*pal
(10) Señgé*d*pal
(11) Ḥo*d*-Sserdpal
(12) Ho*d*-Sser-séñgé
(13) Kun-rin
(14) Don-yo*d*-*d*pal

(14) Don-yo*d*-*d*pal
(15) Yon*b*tsun
(16) Ḥo*d*-Ssér-Señge No. 2
(17) *r*Gyal-va-Ssañpo
(18) Dvañ-*s*phyug-*d*pal
(19) *b*So*d*-nam-*d*pal
(20) *r*Gyal-va-Tsañpo II
(21) Wañ-*b*tsun.

[58] Khublai means the incarnate or one of miraculous birth.

The fourth regent named Chyañ-rin-kyopa obtained a patent from the Emperor of China, soon after which he was assassinated by his servant. The administrations of two of his successors were rendered memorable by the revision of the laws of the country. Añlen, the eighth regent built the outer walls of the Sakya monastery. He also built two monasteries called Khañ-sar-liñ and Ponpoi-ri, the latter situated on a mountain of the same name. During the Sakyapa supremacy the Di-guñ (*h*Bri-guñ) monastery became very powerful, both in spiritual and temporal matters. It was patronised by the districts of Shiñ-chyar, Dvag, and Koñpo, and contained 18,000 monks. There exist in it the biographies of its abbots and many historical records connected with its former splendour and power. During the great dispute between it and its jealous sister the Sakya monastery, the regent Añlen sent all his troops to plunder it and burn it down. When the monastery was set on fire, many of the monks escaped; some, it is said,

---

[59] The following are the 13 districts of Tibet proper :—

1. 2.	North and South Láto (Losto*d*).	6 districts of Tsañ.	1.	Gyama	6 districts of U′.
			2.	Diguñ	
3.	Gurmo (pronounced Kurmo)		3.	Tshal-pa	
4.	Chhumig		4.	Thañ-po-chhe-va	
5.	Shañ		5.	Phag-du	
6.	Shalu		6.	Yah Sañ.	

The 13th district is that of Yaru Dag containing Ya-dotsho or the Yam-do-chho between U′ and Tsañ.

miraculously fled towards heaven, while those who failed to run away were scorched and burnt. Owing to this great calamity, the monastery was reduced to a deplorable condition, but after a few years it was restored to prosperity. During its quarrel with the Gelugpa sect, it was again humbled. Its present condition is the same as that of the Sakya monastery. Añlen died on his return journey towards Sakya. Wañ-tsun, the last of the regents, was involved in a quarrel with his prime minister of the family of Phag-du-pa, the most powerful chief of that age. In the war, Phag-du was victorious. Thus the power of the Sakya hierarchs became extinct after 70 years' reign only.

CHAPTER III.

SECOND MONARCHY 1340—1635 A. D.

Tibet a Dependency of China.

As the power of Sakya waned, the power of her rivals Di-guñ, Phag-dub and Tshal increased. They gradually became most powerful. In the year 1302 A. D., the famous Ta-gri named Chyañ-chhub-Gyaltshan, well-known by his other name of Phag-mo-dú, was born in the town of Phagmo-dú.[60] After subjugating all the thirteen districts of Tibet proper and Kham he established his dominion over Tibet. When only three years of age, he learnt to read and write. At six, he was instructed in religious books by Chho-kyi toñchan Lama. At seven, he took the vows of an Upásaka from Lama Chyan Ña. At the age of fourteen he visited the Sakya monastery where he obtained an interview with the grand Lama, Dag-chhen Rinpochhe, which he effected by presenting a handsome pony. He stayed at Sakya for some time. Once when the grand Lama was sitting at dinner, he called Phag-mo-du to his presence and gave him a gold dish full of food, and assured him that by the grace of the gift he should one day become a great man. At the age of seventeen he passed his examination in letters. At the age of eighteen he was appointed to the command of 10,000 soldiers by patents from the Emperor of China, and entrusted with a seal for his own use; this sudden elevation of Phagmo-dú excited the jealousy and enmity of the chiefs of Di-guñ, Tshal, Yah-Sañ and Sakya, who spared no pains in devising means to ruin him. At last they drove him to war. In the first battle he met with some reverses, but was victorious in the second. The war lasted for many years, when ultimately victory attended the arms of Phagmo-dú, who captured almost all the hostile chiefs and threw them into prison. After this great defeat, the chiefs, nobles and Lamas of U′ and Tsañ, jointly petitioned the Imperial Court of Pekin to degrade the upstart. They represented that Phagmo-dú treated with violence the chiefs and generals of Tibet and especially the Sakyapa authorities whom he had thrown into prison. Phagmo-dú, presenting the skin of a white lion, besides other rich and rare presents, to the famous Tho-gan-thu-mer, then Emperor of China, represented the circumstances connected with the case. Pleased with his sincere statements, the Emperor decided in his favour and furnished him with renewed patents and seals and bestowed on him, to be enjoyed as hereditary possessions, the province of U′, leaving Tsañ to the Sakyapas.

---

[60] He was the son of Rin-chhen-skyah*s*, the chief of Phag-mo-du and Khri-*s*mon-*h*Bum-*s*kyi*d*. The following is the genealogical succession of his dynasty :

(1) Phagmo-du (Tisri) or king Situ
(2) *h*Jam-*d*vyañ-gu-śri-chhenpo
(3) Grag*s*pa-rinchhen
(4) *bSod*-nam*s* Grag*s*-pa
(5) S'akya-Rinchhen
(6) Grag*s*pa-*r*Gyaltshan
(7) *d*Vyañ Grag*s*-*h*byuñ-no

(7) *d*Vañ Grag*s*-*h*byuñ-no
(8) Rin-chhen-*g*dorje Wañ
(9) Pal-ñag-Wañ
(10) Ñañ-wañ-*b*Kraśi
(11) Ñañ-Wañ Grag*s*-po
(12) Namber-Gyalpo
(13) *b*Ṣod-nam*s* Wañ-phyug

After his return to Tibet, he organized a regular form of government. He reformed the legislation, and revised the ancient laws and regulations. He revised the canons and the ancient laws of kings Sroñ-tsan Gampo and Thi-sroñ, which had been discarded by the Sakyapa rulers. He built a castle on Nedoñ-tse hill and a large fortress with three gates to the ramparts. He refused admission to women to its interior. He himself practised abstinence by refraining from the use of wine and the habit of taking afternoon-meals, as prescribed in the Vinaya class of scriptures. He endeavoured to observe the ten virtues mentioned in the sacred books. By his exemplary morals and piety, and above all by his beneficial rule, he won the sincere esteem of his subjects. He founded the monastery of Tse-thañ, and admitted a large number of priests into it. He prepared a copy of the Kahgyur in gold characters. He built thirteen forts such as Goñkar, Bragkar, &c. During the supremacy of Phagmo-dú, the Sakyapa authorities and chiefs, on account of their imbecility and internal dissensions ceased to exercise authority over their subjects. They were also sunk in debt, and during their rule, they had debased the ancient laws of Tibet by an admixture of Chinese and Mongolian laws. It was by these injudicious proceedings that they created dissatisfaction among the people and forfeited the confidence of their subjects. Phagmo-dú having represented all these various acts of imbecility to the Court of Pekin, the Emperor permitted him to annex the remaining parts of Tibet and Kham to his possessions, in order by his rule to increase the happiness and prosperity of the people. This monarch is famous under the title of King Situ. He now became the undisputed master of the whole of Tibet. He made ten million cast images. The fourth in descent from Phagmo-dú was S'ákya Rinchhen, who became a favourite minister of the Emperor Tho-gan-thumer by whom he was entrusted at first with guarding the palace and afterwards with the collection of revenue from one of the great provinces of China. S'ákya Rinchhen, instead of showing his gratefulness, took part in a conspiracy, matured by the Chinese Prime-minister, to kill the Emperor. He sent many wagons, loaded with armed soldiers concealed under decorations of silk clothes and silver and gold. By this means many soldiers entered into the imperial palace. When the Emperor discovered the plot, he fled towards Mongolia by the back-door of the palace. The Prime-minister usurped the throne, from which date China passed into the hands of a native dynasty.

Thus the house founded by the illustrious Khublai ceased to bear sway in China. The throne passed to the traitor Kyen-Hun, whose son Yuṅ Miṅ was proclaimed Emperor. Miṅ presented Tagpa Gyaltshan, son of S'ákya Rinchhen, with gold and crystal seals, and the additional possessions of Kham and Amdo, and several suits of kingly robes. He was made the undisputed sovereign of all Tibet which now extended from Ñaḥ-ri-kor-sum to the western boundary of Kham.

Tagpa-Gyal-tshan was succeeded by his son Vaṅ-juṅ-ne who was recognised by the Emperor Kyen-thai Li-Waṅ. He prepared a complete set of the Kahgyur written on gold tablets. Tagpa-Gyal-tshan was a great friend of the great reformer Tsoṅkhapa whom he assisted with great liberality and zeal. He prepared two sets of the Khagyur in gold, one in an alloy of gold and silver, and three written in ink. He also prepared 1,00,000 copies of Dháraṇis. For years he supported 1,00,000 monks at his own cost. He built the fortresses of Ḥu-yug liṅ and Karjóṅ. His grandson Rin-Dorje obtained the title of Waṅ (king) from China. Ñaṅ-Waṅ Taśi was a very impartial and just king He shewed great veneration for the Dalai Lama Sonam Gyatsho whom he greatly patronized. The celebrated Bhutan Dharma Rájá named Padma Karpo was also his friend. He himself was well versed in Buddhist literature, and impartially respected all classes and religions, and built chaityas in Lhasa and other places. He several times fought with his rebel minister Rin-chhen Puṅpa and was every time successful. He was adorned with the title of Kwadin-kau-srih, by the Emperor of China.

Thus during the reign of the Phagmo-du dynasty all Tibet enjoyed peace and prosperity. People became rich in money and cattle. The country enjoyed immunity from famine and plague, and was not harrassed by foreign invasion, being under the protection of China, and more particularly under the benign rule of the kings of this dynasty. Although some petty fights and quarrels with the disaffected and rapacious ministers now and then disturbed the peace of the kingdom, yet on the whole the dynasty was most beneficial to Tibet. From the time of Namber-Gyal-vañ's reign, the chiefs and nobles of U′ and Tsañ constantly waged war with each other, in consequence of which the power of the king waned, to a great extent. At this critical time the king of Tsañ became very powerful and by taking advantage of the reigning king's weakness gradually became *de facto* sovereign of Tibet. He brought the whole of U′ and Tsañ under his dominion. Thus when fortune was about to turn towards the proud king of Tsañ, suddenly the Mongolian warrior Guśri Khán invaded Tibet and speedily completed its conquest. Guśri Khán presented the fifth Dalai Lama with the monarchy of all Tibet. From that event, in the year 1645 A. D., dates the Dalai Lama's supremacy.

CHAPTER IV.

MINISTERS AND POWERFUL NOBLES OF TIBET.

I. The Family of Rinchhen-puñ-pa.

Ñah-Thi-*t*sanpo, the first king of Tibet, chose for his minister one of the most powerful and intelligent Tibetan chiefs, whom, owing to his imperfect knowledge of the Tibetan language, he used to call Khyè-hu (or the little man). He was afterwards called by his proper name of Gerpal-leg-po. He had three sons, *viz.*, Chhyi Ger, Nañ-Ger and Dub-thob-Ger. The twenty-seventh descendant of Nañ-Ger, named Ralpa Ssín, obtained seven boat-loads of turquoises from Gruguiyul.

The famous Thon-mi Sambhoṭa was a descendant of Chhyi-Ger. Among the descendants of Dub-thob-Ger, many illustrious ministers were born: Gar, the celebrated prime-minister of king Sroñ-tsan-Gampo, Go, Shañ-shi, Da gyal-tshan, &c., the ministers of Thi-sroñ-deu-tsan were among them. The great saint Vairo-tsana was descended from Dub-thob-Ger. Mashañ and other enemies of Buddhism also belonged to his family. One of the descendants of Dub-thob-Ger became prime-minister of King Tagpa-Gyaltshan of the dynasty of Phagmodu. He obtained the Jóñponship of Rinchhen Puñ, the generalship of Chhumig, and afterwards became the highest official under the Sakyapa authorities. His son and grandson Norpu Ssáñpo succeeded him in his dignities. The latter became the commander of the army and headed many of the chieftains of Tibet. He founded the monastery of Roñ-Tsham-chhen and became the chief patron of the first Dalai LamaGedunDub. He left five sons the eldest of whom became the prime-minister of Wañ Tagpo juñné, and succeeded to his father's dignities, favoured the Sakyapa school, and founded the monastery of Thub-tan Nam-gyal at Tanag. He was succeeded by his son Don-yo-ge.

Don-yo being entrusted with the command of the army recovered the towns of Bragkar, Chhu-shul and Lhunpo-tse from the hands of Nelva. He favoured the Karmapa sect of the ancient school of Buddhists, in furtherance of whose cause he founded the Yañpa Chan monastery. He sent an army to subjugate Kyid-shod, but it was repulsed by the Gah-dan forces which came to assist the aggrieved party. His son Ñag-Wañ namgyal became the prime-minister to King Pal Ñag Wañpo and was a great warrior and scholar. He incurred the displeasure of the king by having tried to employ the army under his command to take possession of E′ Ñal, in consequence of which he lost his possessions in U′. He, however, retrieved this loss by fresh acquisitions in another quarter, for Señgetse, Lato, Lho and other places, came under him. He patronized the monastic institutions of Tsañ. He left three sons, of whom the second, called Ton Dub Dorje, succeeded him in his dignities and possessions. This young chief was also a valiant warrior. He obtained possession of Lhun Dub-tse-Jóñ and founded the monastery of Ssáñ-rabliñ. He became acquainted with the dogma of the Dsógchhenpa class of the Ñiñma school. The youngest Ñag-WañJig-Grag also became a very learned man and wrote many works such as a history of Tartar kings, a Romance of S′ambhala, and many other poetical narrations. His son Da-Ssañpo inherited his property and dignities. In his old age, many of his subject chiefs having deserted him, he became poor.

II. The House of Shon-nu Ssáñpo, the Tartar (Hor).

This family traces its origin to the royal races of the city of Sahore in ancient India. Dharmáśoka, king of Magadha, who was born of the family of king Daśaratha, built one million chhortens, and performed other religious acts showing his great piety. His son Jaya also received many miraculous blessings from heaven by means of his prayers. One of his illustrious descendants, named Indrabhuti, king of Sahore, became well versed in the Tantras and ultimately attained sainthood.

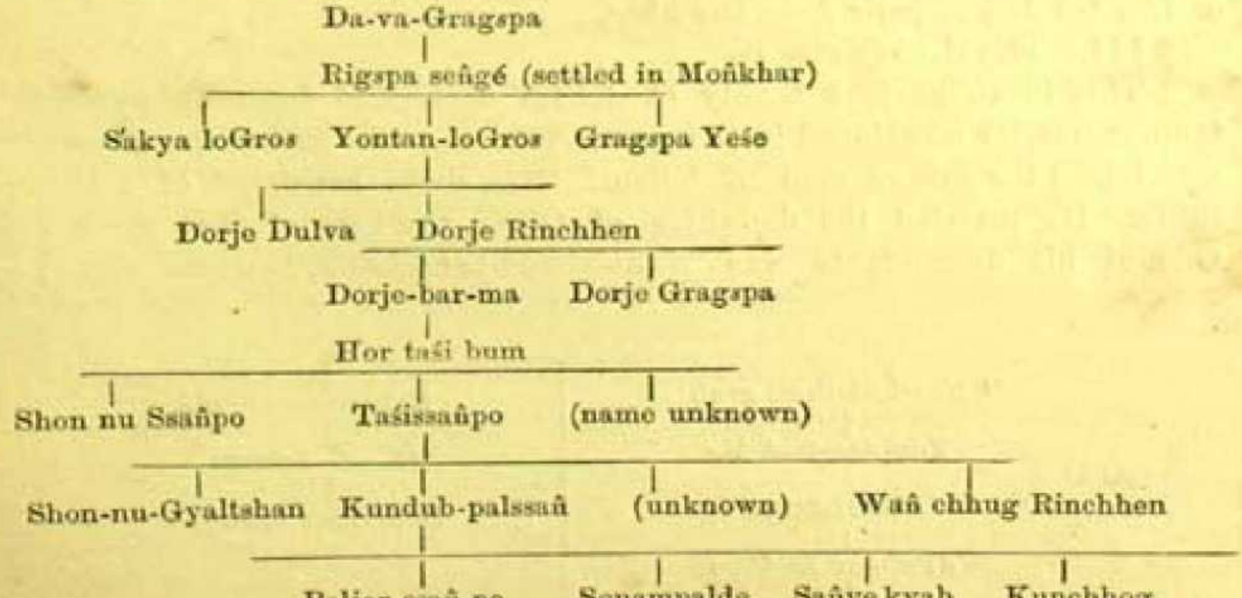
His grandsons Dharma-rája, S′ánta Rakshita, and granddaughter Mandáravá, were famous for their devotion to Buddhism. The second, S′ánta Rakshita, being profoundly read in five classes of Buddhist scriptures, went over to the snowy country of Tibet to lay the foundation of Buddhism. Then Mandáravá became a saintly fairy. She was the reputed wife of Padma Sambhava. Dharmarája succeeded to the throne of his father. He left three sons, Dharmapála, S′ákya-deva and Mahádeva. During this period, king Thi-sroñ-deu-tsan, in order to found the monastery of Samye invited Padma-Sambhava from India. Arrived in Tibet the illustrious sage invoked the Nágas to guard the institution against attacks from malignant spirits and malicious folk, but they having expressed their inability to undertake such a serious charge, Padma Sambhava, sitting in Yoga, invoked the prince of genii well-known by the name of Pehar. But as the genius was reluctant to go over to Tibet having for master Dharmapála,[61] the king of Sahore, king Thi-sroñ Deu-tsan sent an Ambassador with such presents as a turquoise image of Buddha, musk and crystal, to invite them both to Tibet. After meeting with great hardships the party arrived in India. King Darmapála accepted the Tibetan king's proposal. King Thi-sroñ-déu-tsan appointed him as his chief spiritual guide and minister, and gave him large jagirs. The demon Pehar Gyalpo[62] was bound, by a solemn oath to protect the Buddhism of Tibet. He was so vigilant and quick a guard that he could detect and pursue a thief who, after stealing anything as small as a needle from Samye, could fly eighteen times fleeter than an eagle. Dharmapála married the fairy Phoyouñ-ssah by whom he got two sons Pal Dorje and Rinchhen Dorje. The younger, turning a hermit, visited India and died in the city of Sítá miraculously. The elder married a Tibetan lady by whom he got three sons Rinchhen-tagpa, Dorje-tagpa, and Chho-kyi-tagpa. The youngest became a monk. The eldest Rinchhen tagpa had a son of the name of Da-va-tagpa.[63]

---

[61] This appears to be a legendary account of the famous Dharmapála of Magadha.

[62] According to the majority of Tibetan Historians, Pehar was invited from the Western country of Urgyen, which is identified with Gazni and Balk.

[63] Line of Rinchhen tagpa :—



Da-va-tagpa's eldest son Rigpa señge, settled in the Moñkhar country, and inherited his possessions and office. He became minister to the reigning king. Shon-nu-ssañpo and Taśi-ssañpo were ministers of king Situ, the founder of the Phagmodu dynasty of kings. The eldest was the general who defeated the Sakyapa armies at the battle of Yarlúñ; in consequence of which Sakya, Tsañ, Jañ and Lhomañ came under his master's possession. Paljor Ssañpo the last mentioned in the table, became Joñpon of the town of Ñañ-SamDub-tse. He signalized himself in a war, and was a great friend of the first Dalai Lama Gedun-dub.

Rinchhen-tagpa, probably a son of Paljor Ssañpo, became chamberlain to king Wañtag-gyaltshan, a descendant of king Situ. His younger brother became versed in Tantrik ceremonies and is said to have possessed great influence over clouds and winds. He rendered immense good to the country by bringing down rain in times of drought. Rinchhen-tagpa's son, Hor Taśi Dorje, became minister of king Wañ-tagpa Junne and founded the monastery of Rivo-de-chhen. He left two sons Tse-wañ-namgyal and Rinchhen Gyaltshan. The first was a professor of Buddhism. The youngest, being a wise and learned man, was elected chief minister of state. He was appointed Secretary to the Commission which sat to settle the great dispute which took place between U' and Tsañ. At its conclusion, when matters were brought to a happy close, he was rewarded with a large jagir consisting of three towns. His eldest son was appointed General of the king's army and the second son was appointed Prime-minister. The eldest left two sons, *viz.*, Sonam-Targe and Tondub Dorje. The younger turned an ascetic and the elder became the minister who patronized the Dalai Lama Sonam Gyatsho. His son Sonam-targe obtained the town of Lha-tse Joñ as jagir from the king.

III. *r*Gyal-khar *r*tse-pa.

This is an ancient family of Kham descended from Da-gyo-loñ, a famous warrior mentioned in the great Tibetan epic called the Gyaldrúñ, who tamed the savage men of Kham. His dress consisted of 100 tiger skins. He married the daughter of Qesar, the hero of that great epic. One of his descendants was Nam-kha-chyañ-chhub,[64] whose son Yon-dag-suñ-ñig was a powerful Tantrik. His son Gyal-tsan knew several languages and was a Buddhist scholar. He wrote several works and favoured the Karmapa sect of the old school. He built the monastery of Tshurphu called Chyañ-chhub-chhenpo. Paldan Ssáñpo, his son, was an official of high rank under the Sakyapa hierarchy. He was sent as ambassador to the Tartar Emperor of China, and returned successful from his mission. He erected the forts of Tse-chhen, Phag-ri, Gyal-tse, Náve and Khyuñtse, and a monastery at Tse-chhen. Rabtan Kun-Ssañ, his son, became minister to king Tagpa-gyal-tshan. He defeated the troops of Namkha-gyalpo, the chief of Rinchhen Puñpa, and made them prisoners of war. He patronized Panchhen Rinpochhe, Kha Dub Ge-leg-pal Ssáñ. He founded the famous monastic institution of Gyal-tse called Palkhorchho-de with eighteen schools in it, and erected the picturesque chhorten of Gyaltse called Chhorten Taśi-Gomañ, which has 108 doors and is several stories high. He was famous for his devotion to religion and was the most celebrated king of Gyal-tse.

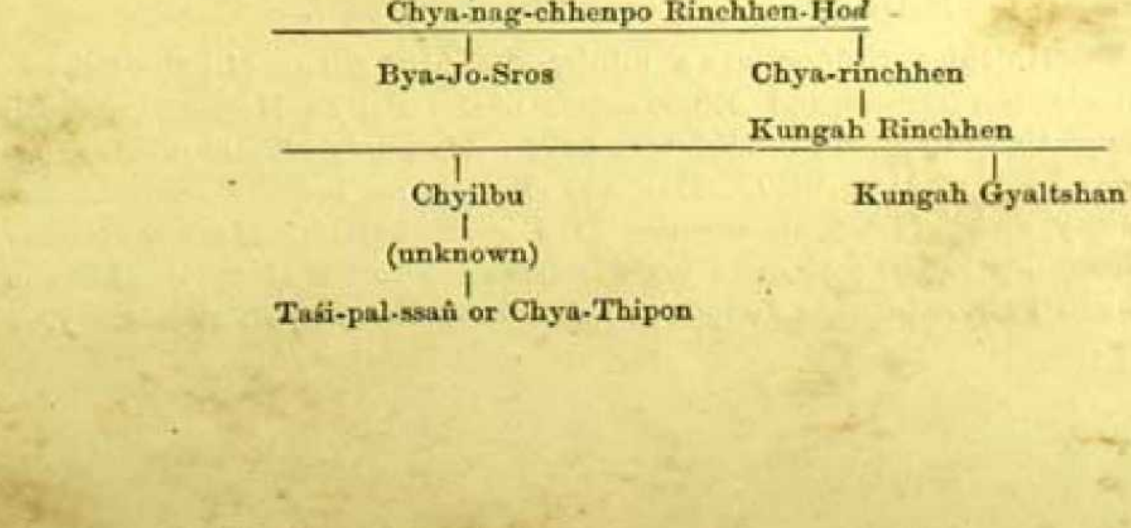
---

[64] Namkha-lhun grub
Yon-dag-Suñ-ñig
*r*Gyal-tsan
*d*Pal-dan *l*Ssáñpo
Rabtan-kun-*l*Ssáñ
*b*Kraśi *h*phag*s*
Don-Grub *h*phag*s*

IV. Chya-Thi-pon. (The bird-general.)

Once on a time in the lower Yar-luñ District north of Lhasa, a very handsome maiden was met by a splendid looking bird, who captivated by her personal charms had descended from his aerial residence. After some time spent in happiness with the bird she gave birth to a son named Chya-mig[65] who became a great supporter of Buddhism. Yon-ton chhog, grandson of Chyamig, was a learned man and well-known by the name of Yar-khanpo. Dorje-wañ-chhug his nephew went towards Ñañ and founded the town of Gyam-tsho. Dorje's son Lama Chya-nag was a

[65]



pupil of S'ákya S'rí Paṇḍita of Kashmír, who became a renowned teacher and founded the monastery of Yañ-tse. His second son Chya-Rinchhen, after repelling many Tartar armies, became the chief of Enyal. His son Kungah-Rinchhen became a minister of Kungah-Ssáñpo the regent under the Sakyapa Lamas. He was a pupil of Dogon Phagpa. He left four sons of whom the first Kungah-Gyaltshan was appointed minister to the Sakyapa regent Ḥod-ssér-señgé. The second son Chyilbu being a nephew of the chief of Diguñ, was appointed Joñpon of Chyar Dag. His son became abbot of Ssáñmochhe, whose grandson Taśi-pal Ssáñ became the general of king Tagpo Gyaltshan, under the title of Chya Thipon. Taśi's son Gyal-wa Taśi became secretary to the king and inherited his father's titles and dignities. Gyal-wa's son Taśi Dargye was appointed General of Lhogyud-Luñ by the king. He prepared a set of the Kahgyur in gold characters, constructed many images and chhortens and did many pious acts. From him the title of Chya-Thipon obtained its celebrity. The last men of this dynasty served as deputies to the kings of Phagmo dú dynasty.

V. Secretary Tag-pa-Ssáñpo.

Ñañ-Tagpa Ssañpo of a family descended from Vañ phugÑan, the secretary to king Thi-sroñ deu-stan, was born in the Eastern district of Tsen-thañ. He became one of the ministers of king Situ. His son S'erab Taśi served as an envoy to the Tartar Emperors of China, from the Sakyapa and Tshalpa Lamas. He was a devoted minister, who in the discharge of his duties did not fear to risk his life. Honesty and self-denial were his prominent virtues. He conducted his affairs personally before the celebrated Thugañ-themur. He returned to his master's presence, having successfully accomplished his mission, with the imperial patent in his hand issued in favour of his master king Situ. Pleased with his conduct, the king presented him with the town and fort of Tag-kar. His son Rinchhen Pal Ssáñ succeeded him as Joñpon and was a sincere patron of the great reformer Tsoñkhapa. He helped him greatly in the building and establishment of the Gah-dan monastery.

VI. Nelva.

Rinchhen Ssáñpo was a minister of king Situ. In the Sakya war, he made the regent and other chiefs of the Sakya Hierarchy captives and kept them in prison for thirteen days. He punished 500 rebels, for waging war against king Situ. His son Pon-tagpa became commander of the army, and defeated his enemies in a great battle. He was famous for his liberality to the poor, and for his devotion to the clergy. His son Nam-khah Paljor, became Joñpon and favoured the Dapuñ monastery.

VII. Magpon Sonam Gyalpo.

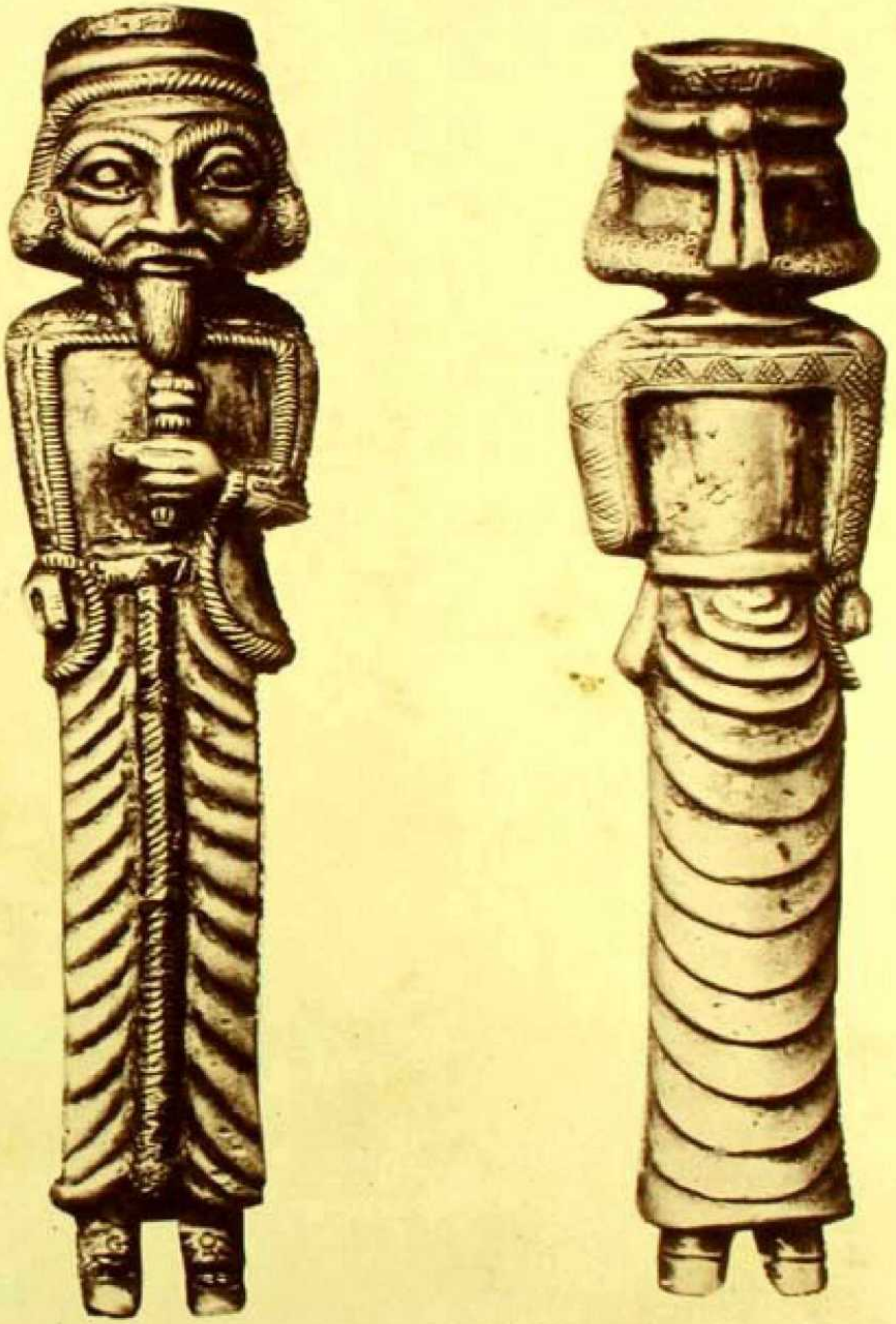
This family is descended from Gar the celebrated minister Sroñtsan Gampo. They were the chiefs of Tshal, but being defeated in war by king Situ, they became his vassals. One of the illustrious members of this family was superintendent of the Gah-dan monastery. His son Sonam Gyalpo was a celebrated general who being victorious in war with Rinchhen Puñpa in the battles of Lho-bragpa, Dvagpo and Koñpo, became well-known by the title Magpon or general. He subsequently became magistrate of Lhasa. He built a gold dome over the great temple of Lhasa. His descendants have all along served their country well.

VIII. Deva-Ḥolkhapa.

This family is of modern origin. The founder of it Taśi Gyal tshan was chief secretary to king Tagpa-Gyaltshan. He was appointed a Joñpon. His son Chho-Je-Ssáñ founded the monastery of Ñima liñ and endowed it with grants of land and furnished it with the Kahgyur and the Tangyur. In his old age he led the life of an austere monk. His two sons NorSsáñpo and Gyam-tsho-pa became ministers and generals to the king's army. The son of the elder brother was the well-known Khadub Nor Ssáñ who was profoundly versed in Sútras and Tantras. He wrote many works, such as Thime*d* Ḥo*d*chhen, &c. and was appointed tutor to the Dalai Lama Gedun-Gya*m*tsho.

(To be continued.)

ROYAL STATUETTE.



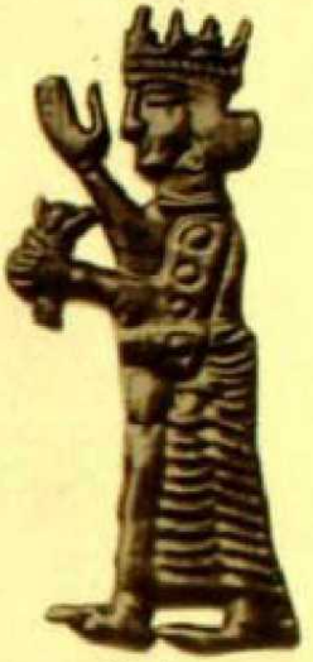
SOLID SILVER
Full size, 5794 Grains,

RELICS FROM. ANCIENT PERSIA.

ROYAL FIGURES

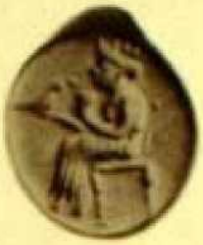
GOLD.

1



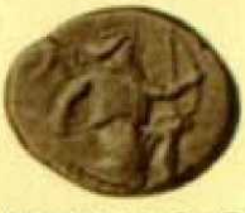
84 Grains

2



GOLD RING 271 Grs

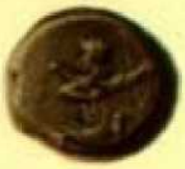
3



GOLD.

DOUBLE DARIC

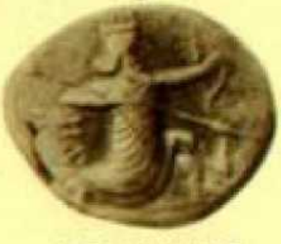
4



SILVER PIECE

4 Daniks. = ¼ Siglos.

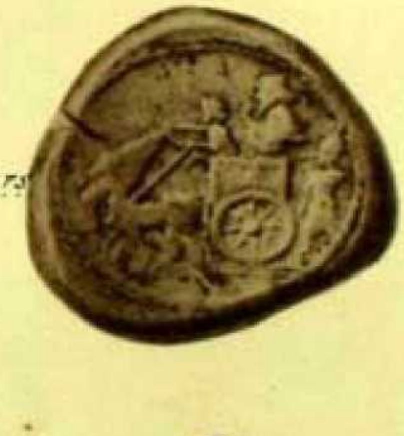
5



SILVER.

ARYANDIC

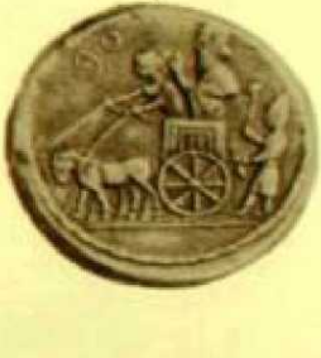
6



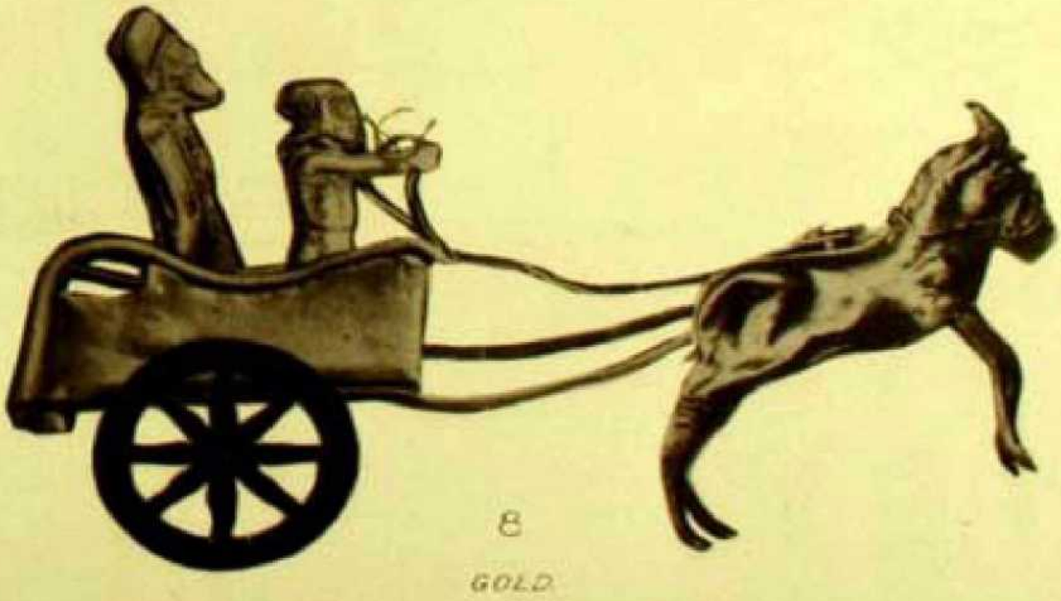
407¾ Grs

SILVER PIECES. OF FIVE SIGLI OR QUARTER DARICS.

7



400 Grs



8

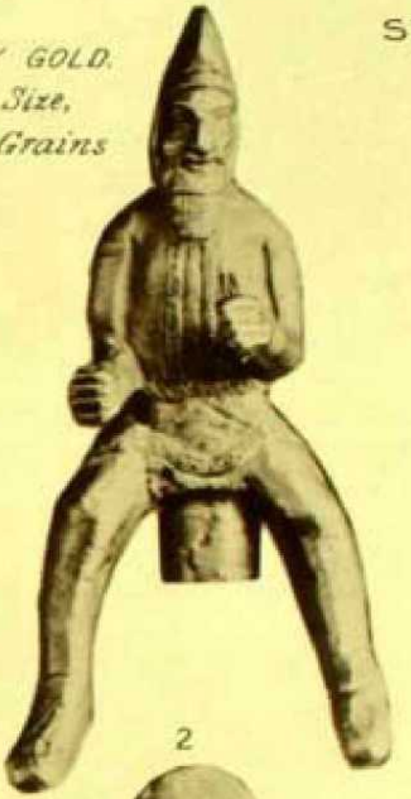
GOLD.

2 Wheels and 3 Horses lost.
Chariot 368 Grains, 1 Horse 96 Grains.

RELICS FROM ANCIENT PERSIA

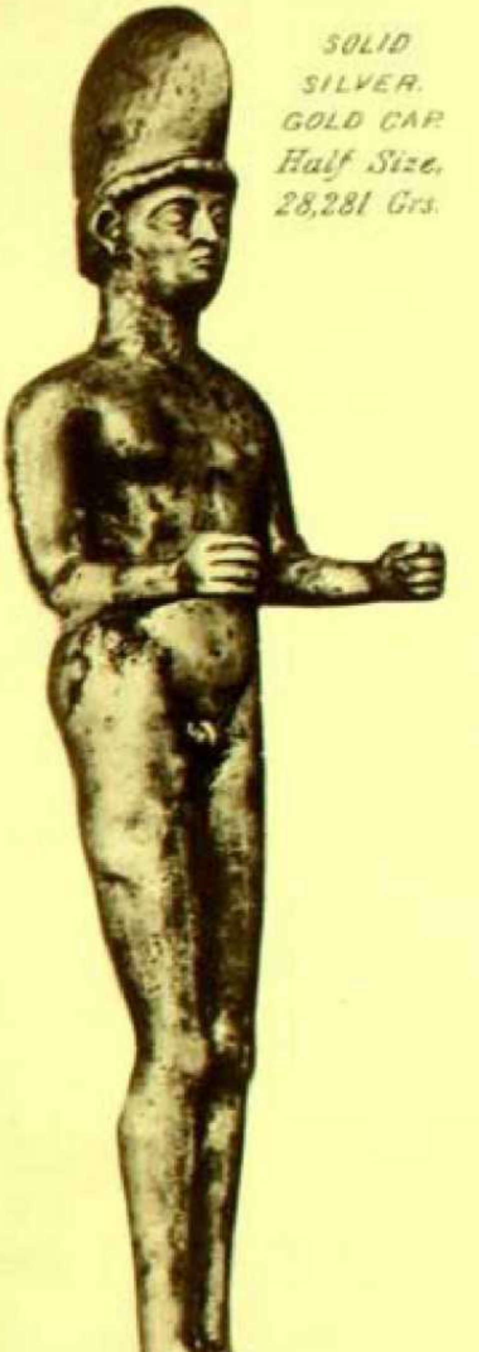
STATUETTES.

1



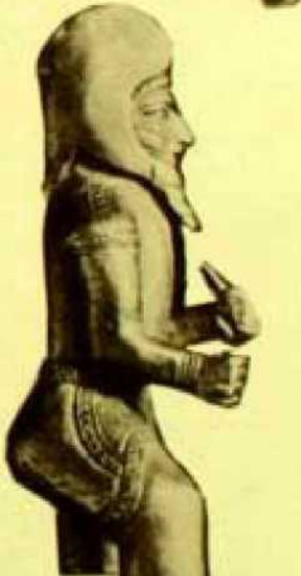
THICK GOLD.
Full Size,
1063 Grains

3

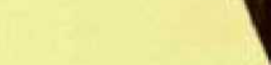


SOLID
SILVER.
GOLD CAP.
Half Size,
28,281 Grs.

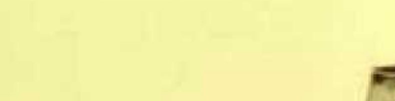
2



5



4



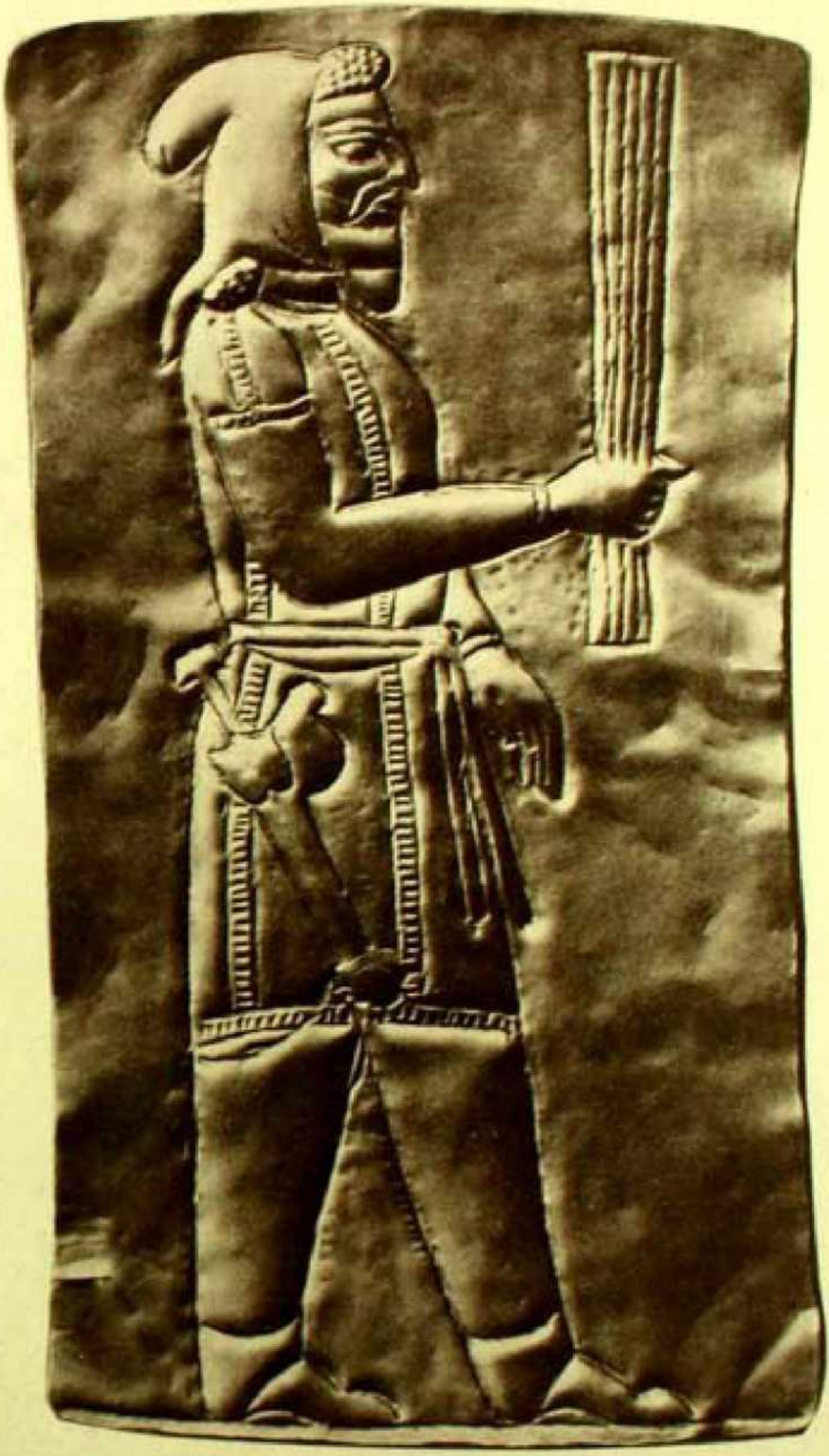
THICK GOLD.

Full Size, 673 Grains.

6

RELICS FROM ANCIENT PERSIA

MAGUS WITH BARSOM WAND.

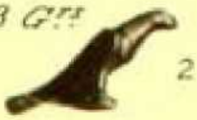


GOLD PLATE - 624 Grains.

RELICS FROM ANCIENT PERSIA.

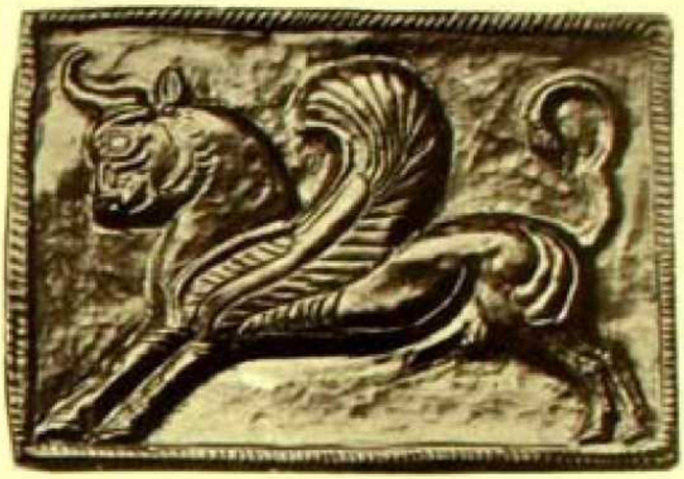
ANIMALS,
ALL GOLD.

2



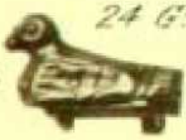
EAGLE
13 Grs

1



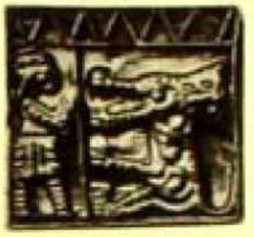
WINGED BULL, Full size, 134 Grs

3



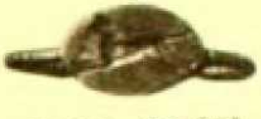
PIGEON.
24 Grs

4



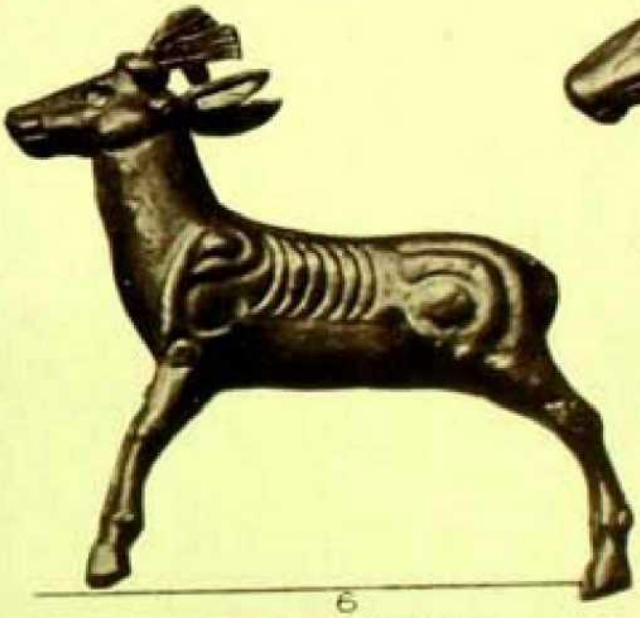
MAN & LION. 26 Grs

5



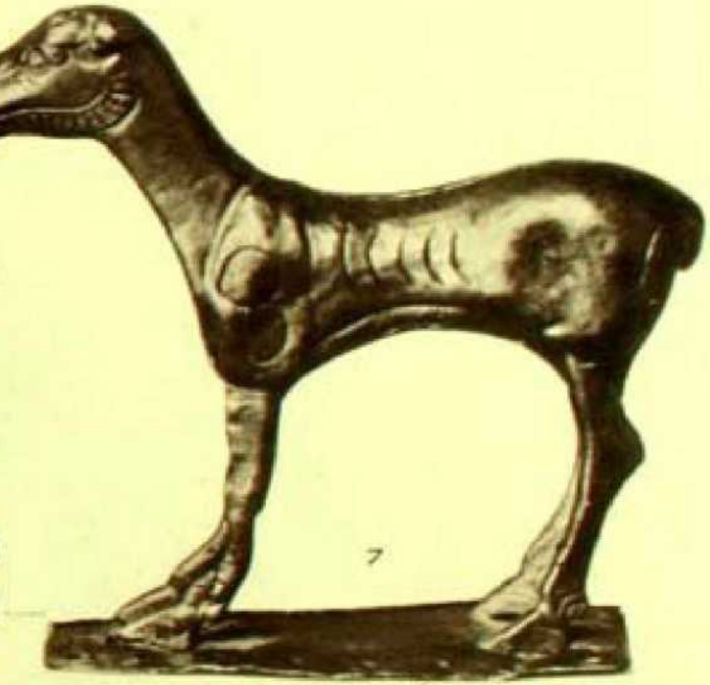
RING 60 Grs

6



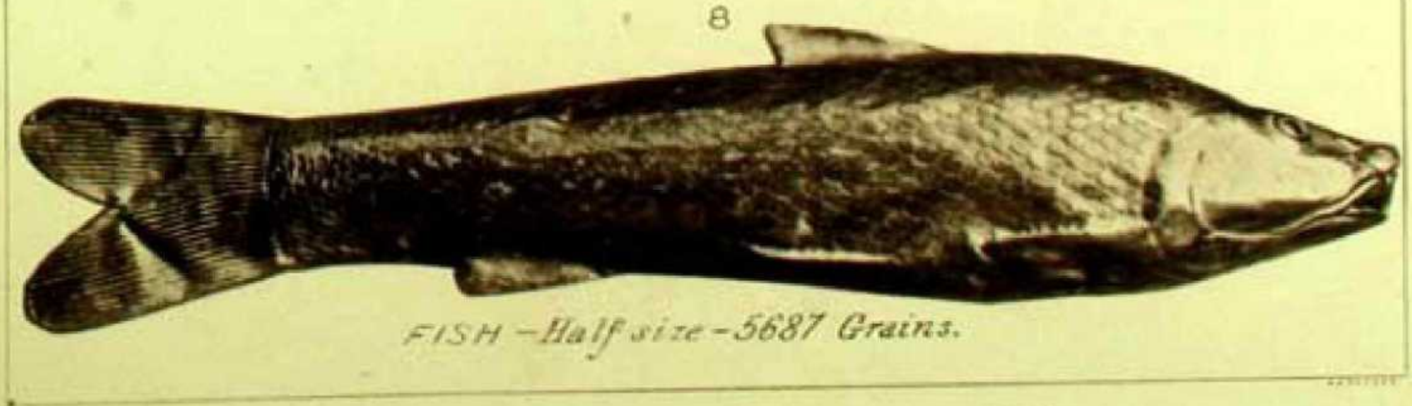
STAG - 385 Grs

7



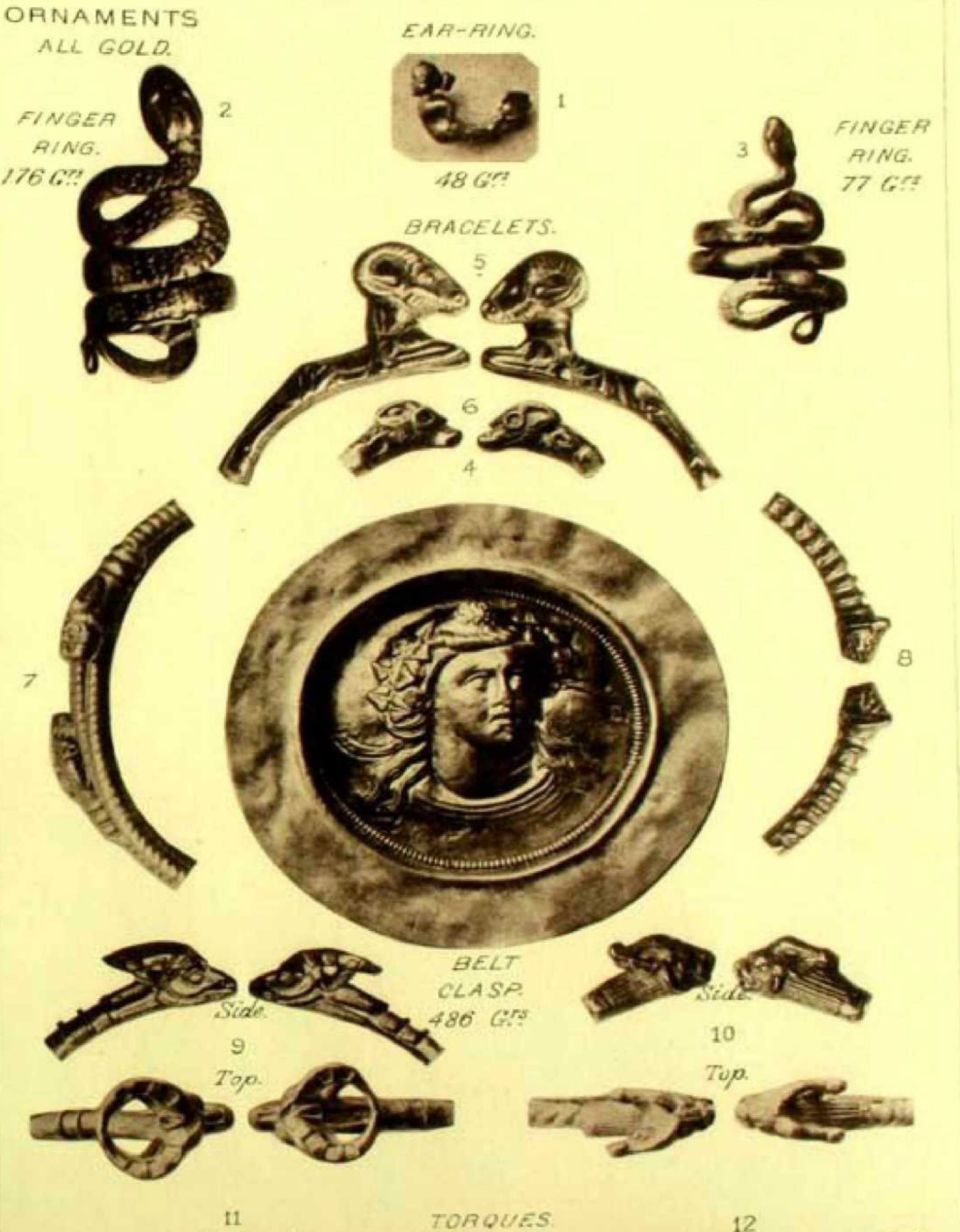
SHEEP - 924 Grs

8



FISH - Half size - 5687 Grains.

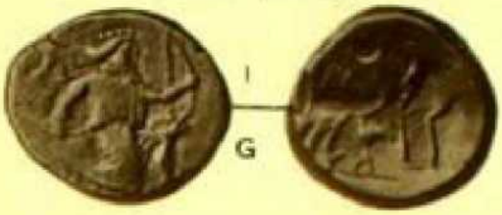
RELICS FROM ANCIENT PERSIA.



RELICS FROM ANCIENT PERSIA.

PERSIAN COINS.

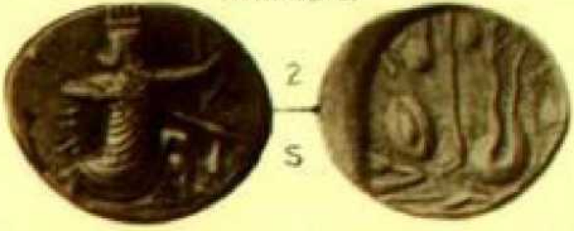
DOUBLE DARIC.



1

G

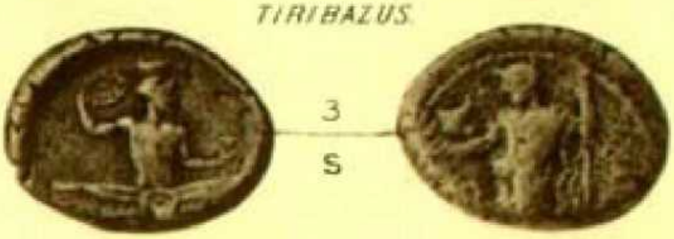
AYRANDIC.



2

S

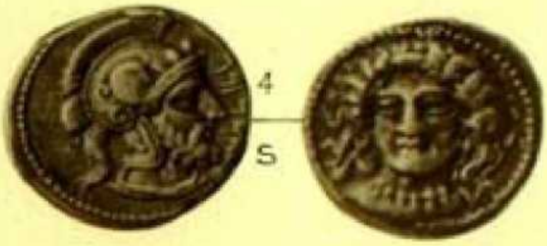
TIRIBAZUS.



3

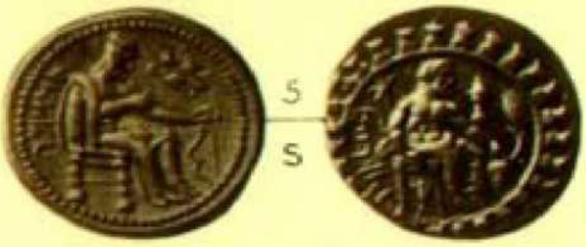
S

TIRIDAMES.



4

S

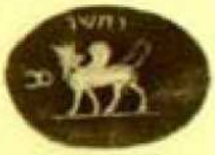


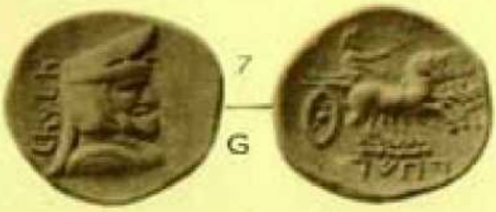
5

S

6

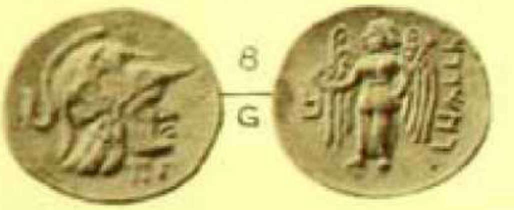
GOLD *RING.*





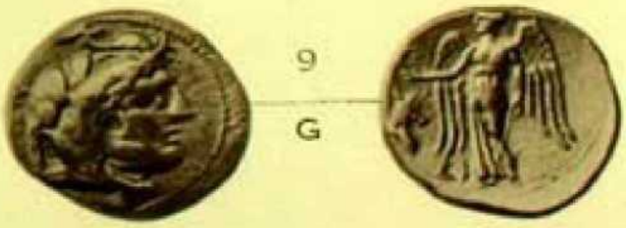
7

G



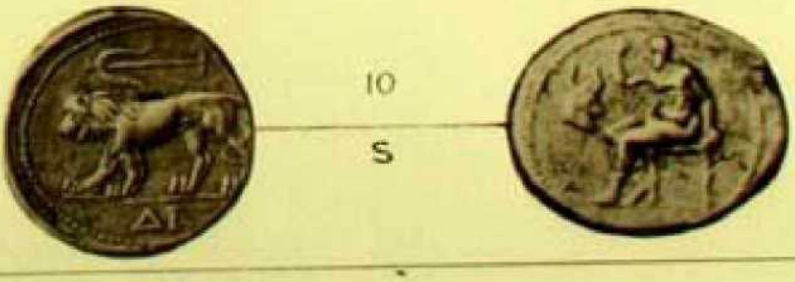
8

G



9

G

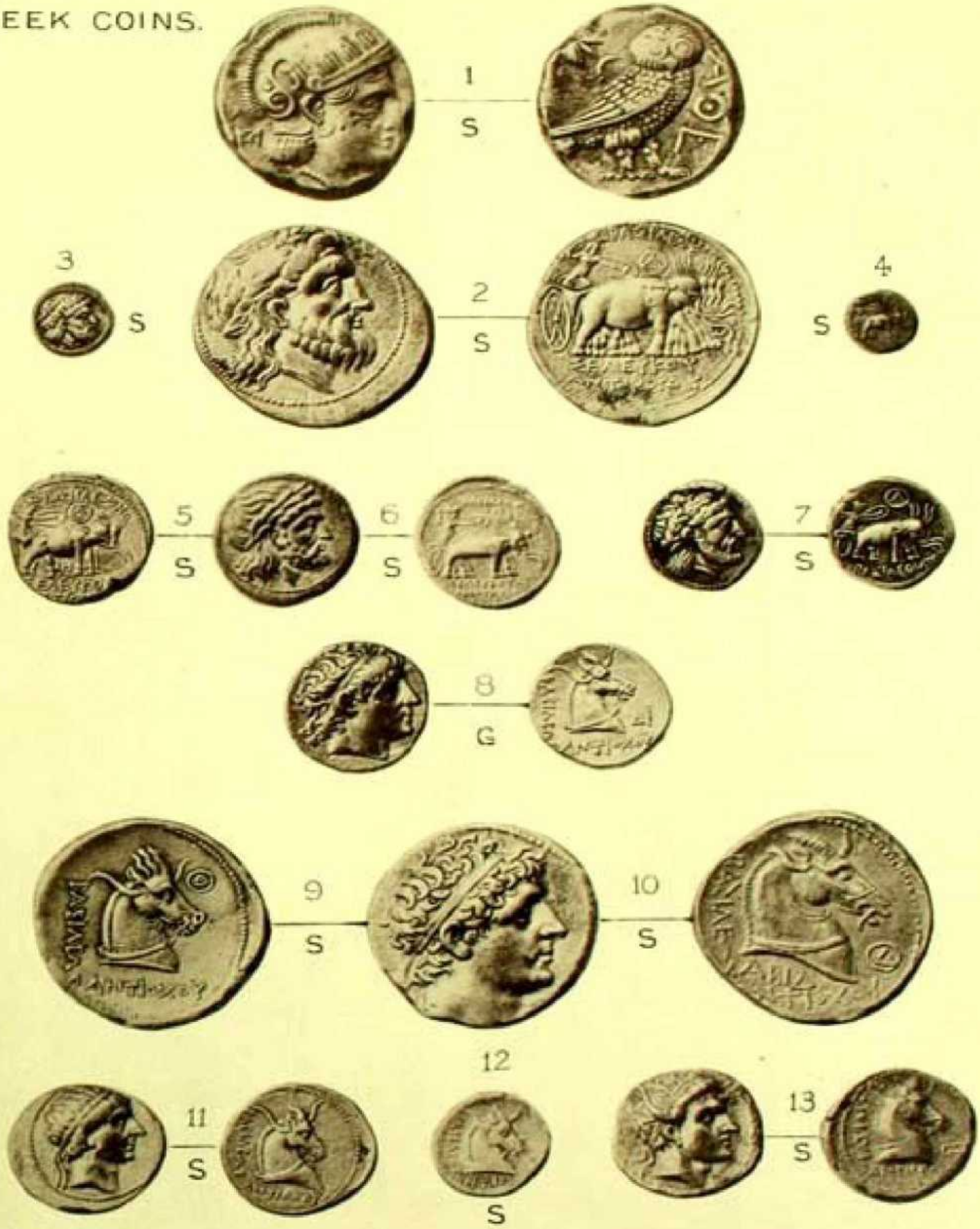


10

S

RELICS FROM ANCIENT PERSIA.

GREEK COINS.



RELICS FROM ANCIENT PERSIA

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

◆

Part II.—PHYSICAL SCIENCE.

No. I.—1881.

I.—*Report on a visit to the Nongyang Lake, on the Burmese Frontier, February* 1879.—*By* S. E. Peal, Esq.

[Received November 11th;—Read December 1st, 1880.]

(With Plates.)

Last year, I prepared a short note on the old Burmese route over Patkai, *viâ* Nongyang, viewed as the most feasible and direct route from India to China,* and, having a month's leave in the cold season, I determined to proceed, if possible, to the pass over the Patkai leading to Upper Burmah, report on the same, take altitudes, &c., and explore the Nongyang Lake, in the valley of the same name beyond, on the Burmese side of the water-parting.

Permission to travel east and to cross the frontier was kindly given to me by the Chief Commissioner of Assam, in time to enable me to start from Jaipur, on the Dihing river, by the end of January 1879.

Hitherto, on this line of route considerable delay and inconvenience have always been caused to travellers from the want of a sufficient number of trustworthy load-carriers; parties have been detained eight and ten days while the necessary men were collected, and *en route* exorbitant demands have often been made. At times, as in the cases of Major Sladen's, and Mr. Cooper's parties it completely frustrates all attempts at progress. I therefore secured enough men whom I could rely on as porters before starting. The party consisted of seven picked Bengali coolies, an Assamese orderly and his mate in charge of my arms and instruments, &c., a cook used to camping, a Khampti boatman and his Duania mate, and, subsequently a Singphú guide,—as small a party as possible.

---

* Journal, A. S. B., Vol. XLVIII, Part II, 1879.

Among us all we could manage to speak English, Hindustani, Bengali, Sonthali, Assamese, Khampti or Shan, Singphú, and Nága.

The *lingua franca* of the party was Assamese, though as we went east Singphú and then Nága of the Namrup was chiefly spoken to outsiders.

Three Alpine tents, 7 ft. × 7 ft., weighing about 8 lb each, poles included, enabled us at any moment to camp comfortably and very quickly; at the same time, when rolled up they served as padded poles on which to tie baggage. Six small and extremely light boxes, measuring 10 in. × 12 in., × 18 in. and provided with locks and hinges, served to carry stores, presents and sundries securely, a great object being to avoid bulky and heavy or open packages. As it was desirable to explore the Namtsik river and Nongyang lake, a small dug-out (*Rob Roy*) was also taken slung on a bamboo between two men, with bedding stowed inside. A Snider carbine, a double-barrelled central-fire No. 12 shot-gun, a revolver, and a Deringer were the arms.

Our first day's march was east to Jaipur, at the junction of the Dhodur Ali with the Dihing river, formerly a place of considerable importance, and likely to become so again. Large steamers can reach it from the Brahmaputra in the rains, and small ones during about eight months of the year. Coal, petroleum, and timber are also to be found in large quantities not far off. It is also the point at which a route from Burmah would practically emerge. Government has wisely reserved large tracts of forest up-stream, and already some teak has been planted.

The first care on arrival was to secure a good boat for the heavy stores to go by water up the Dihing, and, this done, an application in person to old Turkong, of the Phakial or Khampti village, secured me a good boatman named Múng, a Khampti who has piloted many up and down this river, who knows all the people, villages, and folk-lore of these parts, and is withal intelligent and communicative. By noon all supplies of rice, tobacco, salt, opium, cloths, sugar, &c., were stowed, and six of the men started lightly laden, by land, the rest of us in the large canoe.

Soon after leaving the station of Jaipur we passed up some very beautiful reaches of the river, where the water, deep and still, slowly winds among wooded hills (the gorge in fact), with huge bedded sandstone rocks along the flanks covered by ferns, bamboos, wild plantains, canes, and other products of a sub-tropical jungle. Towering above all, here and there, rose the great bare branches of dead rubber-trees, once so plentiful and now so rare, a silent protest against reckless tapping.

Some of the reaches are nearly a mile long, water 30 and 40 feet deep, though here and there becoming more shallow and rapid.

At one spot a picturesque pile of rocks, capped by forest trees, divides the stream equally, and is called "Hita Tatol, from *Sita's tat-hal*, the weaving-hall in which Sita was found by Ram.

Here and there we passed camps of people who were cutting bamboos to raft down to Jaipur for building, also native boats of the usual small dug-out pattern. Having the *Rob Roy*, I was enabled to paddle ahead or stay behind sketching, and at one place made a small careful memo. of a huge dead rubber-tree that had fallen over into the river,—the trunk and branches resembled a huge dragon.

As rain appeared to be coming on, we camped early at a large high sand-bank, near a rapid called Digoli Gagori. In a very short time we were all comfortably housed, fires blazing under the cooking-pots, and a pile of dry logs got in ready for the night-fire. Our three tents and the boatmen's bivouac were generally so placed as to form a cross, the openings facing a log-fire in the centre, that was at once light and heat for all. The assembling round this camp-fire every evening after dinner was generally looked forward to all day. Here we met strangers, heard the local news or stories, the inexhaustible Múng generally giving us the traditions, often illustrated by very creditable maps in the sand. Villagers, if near, always joined our circle, enabling me to collect a large amount of information, or explain the objects of my trip, which is an item of some moment in cases of this nature.

The monotonous rush of the rapid at last was the only sound heard. The night turned out cold and foggy. Once the echoing bark of the little hog-deer roused me, and I put the logs together that had burnt apart. In the early morning the dew-fall was sufficiently heavy to be audible several hundred yards off, the moisture condensed on the higher foliage falling like a steady slow shower on the dried leaves on the ground. Ere starting at 9 A. M. I made all the people cook and eat their breakfasts. At 10 A. M. we passed the mouth of the Namsang river on our right (but the left bank of the river). It rises among the hills of the Namsang Nágas, and near its mouth is a small tea-garden.

More or less scattered up and down the river Dihing, there are names and traditions that unmistakably indicate this as the old Ahom route to and from Burma,—a highway of the past. The earlier portions of the "History of the Kings of Assam," detailing the Ahom invasions, clearly enough point to the Dihing river as the line of entry, and Nongyang as the part of the Patkai where they crossed, the name Patkai having originated there.

About 11 A. M. we came to *Noralota*, a tree-covered ridge jutting into the Dihing river, which derives its name from Nora-ulota, *i. e.*, Nora's returned. In November 1228 A. D. Sukapha Rája coming to Assam from Munkong with 1,080 men, 2 elephants and 300 ponies, brought also "Chum Deo" (unknown to the owner) Noisanpha Nora Roja of Munkong, Noisanpha missing Chum Deo, sent men after him for its recovery who followed to the Dihing whence they returned, this spot being now called "Nora-ulota," a Nora's returned.

The following is a copy of the passage in the History of the Kings of Assam.

শঁকাব্দা ১১৫০ শঁকর ১৬ আঘোন ইংরেজি ১২২৮ সনে চুকাফা রজা দেও আহোঁতে লগত অনা মানুহ ১০৮০, দঁতাল হাতি ১, মাখুন্দি হাতি ১, ঘোরা ৩০০, থাও মুং ক্লিং লুন্ মাং রাইদুরা গোহাই ও থাওমুং কানঙ্গন বর গোহাই, এই খনি সহিতে চোম দেওক লৈ আহিল। এনেতে দৈবাত মুংকং দেশর নইচানুফা নরা রজাই চোম দেওক বিচারি নেপাই, চুকাফাই নিলে জেন ভাবি, চুকাফা রজাক ধরিবলে মানুহ পাঠালে। সেই মানুহে থেদি আহি চুকাফা রজার লগ নেপাই; জি ঠাইরে পরা উলটি গল, সেইখনি ঠাইকে নরা ও লটা বোলে।

As we went up the river, the hills on either flank gradually subsided, and gave place to level land, covered with mixed forest, the waterway became shallow and wider, several Duania villages were passed, built more or less after the Singphú pattern, *i. e.*, long sheds of bamboo, the floor raised on small posts. These people are the descendants of Assamese carried off by Singphús some 80 or 100 years ago, and reduced to slavery. Many escaped from Hukong during and after the Burmese wars, and are now located about the Dihing river, speaking both Assamese and Singphú,—dressing like the former, but having the gross superstitions of the latter.

During the day the Namsang Purbot, or hill, was a conspicuous feature in the landscape, generally forming a fine background to the views on the river. Its outline is good, and the colour at times dark green to blue, or even purple, is seen reflected beautifully in the long still reaches of water, with, at times, a wooded island in mid-stream, and a foreground of snags piled in picturesque confusion.

We were in no great hurry, so camped at the *Juglo* Duania village, the ten or twelve houses of which were placed end on, at a few yards back from the edge of the bank of yellow clay 30 feet high.

Selecting a clean stretch of sand by the water, under the cliff, we soon pitched our tents, and were visited by the headman, who brought the usual little present of fowls, eggs, and some rice. The *Rob Roy* caused some amusement, and one of the young men paddled it about very creditably, considering it was rather crank, and the stream strong. As usual, great interest was taken in my journey, and routes discussed after dinner. My kerosine wall-lamp, revolver, and guns were duly wondered at, and a tiger happening to announce himself by a loud whistle on the opposite bank, I was enabled to gratify them by a shot from the Snider to frighten it away, the echo rolling through the forest on each side for a long way, and sounding unusually loud and prolonged in the still night. At 9 P. M., the thermometer stood at 65°, and we had a fine night.

In the morning there was a heavy fog, with the usual light west-by-south-west wind, threatening rain; temperature of the Dihing water 68°

and air 63°. After all had cooked and eaten we started up-stream between two islands, the river bed becoming wider up to 400 yards. Extensive shallows over sandy bottom often rendered it difficult to keep to the passage, a line of deeper water frequently ending in a wide shallow that compelled all hands to get out, and by sheer force push and drag the canoe to the nearest channel.

Near Poai Múk there were large islands of dry sand in mid-stream, which are evidently well covered in the rains, thus indicating the large body of water that must then be needed to fill the river bed.

It was about here that some forty years ago a small cannon fell into the river during an expedition, and which is now commonly reported to go off with a loud bang under water once every three years.

About 11 A. M. we reached Mákúm, a village on the right bank, now celebrated for its fort, situated on a clay bluff overhanging the river. A native officer and 20 police are in charge. The plan of the building is a Maltese cross, walls 4 feet thick and 50 high, loopholed in three stories. It was erected by the late General David Reid, R. A., who had long experience on this frontier, and to whom we are indebted for most of the little permanent work of this kind in Eastern Assam. The fort is impregnable to savages like the Nágas. While at Mákúm I saw old Gubor Jemadar, formerly in charge here, but who is now pensioned. He has great influence among the hill tribes about, and by timely tact has on several occasions saved us from political complications with the Nágas.

After hearing the object of my journey, he quite agreed as to its feasibility and safety, giving me also some valuable information regarding the tract I was about to visit, though he had himself never seen it.

At Mákúm the Dihing is 350 yards wide, and at this season runs shallow over shingle. Not far off there are valuable beds of coal up to 20 and even 30 feet thick; there are also petroleum springs. The river here takes a huge bend, the concavity facing the Nága Hills opposite to the south. On a fine day the view from the fort, across the river and low forest and lower ranges of hills, is very fine, the higher ranges bordering the basin of the Tirap running behind, as at Rangatu, 3,500 feet. Beyond these again lie the hills near Yungbhi and Yugli, and the Patkai in the extreme distance at 5,000 and 6,500 feet, rising here and there to 8,000.

Having made the necessary arrangements as to parcels and letters, we started next morning at 11 A. M, reaching Insa, or Bor Phakial, in the afternoon, and camping on the huge sand below the village. The inhabitants are mostly Khamptis, or Shans, a race from the south-east, who are scattered more or less about near here, their head-quarters being at Manchi or Bor Khampti, on the Mli Kha branch of the Upper Irawadi. They speak and write Shan, using the Burmese character, and are Buddhists.

They dress in white or dark blue cotton jackets, have, like the Singphús, a sort of kilt of plaid pattern, dark blue, green, and yellow, the prevailing mixture, and round the shoulders wear a large thin *chudar*, or wrap, 10 feet by 3 feet, of some bright red and white check pattern, and a white *pugri*, generally worn in a conical form, covers the characteristic knob of hair on the tops of their heads; their cloths are home-made, like their rude pottery, the manufacture of each can be seen going on daily here and there. Amber ear ornaments are common to both sexes, and the men generally have the so called Khampti *dáo* worn in or on a sheath, slung under the left arm by a cane-loop passing over the right shoulder.

The women now wear clothes more or less like the Assamese, though now and then a Shan costume of dark blue can be seen, skirt and jacket, the latter having a close row of silver buttons, the head covered by a dark blue *pugri*, laid on in close coils,—a remarkable and pretty *tout ensemble*.

In colour these Khamptis are paler than the Assamese, though at times with a yellowish tinge, the hair and eyes black, and faces clean; the moustache, if worn at all, is generally a failure; high cheek-bones, small eyes, and wide flat noses are the rule, giving the well-known Mongolian cast of features. Both sexes are rather short and stout in build.

After dinner, the elders paid me a visit, and, having been there some ten years before, recognized and welcomed me, and made many enquiries after "Jenkins Saheb," whom they all remembered. As usual, they were greatly taken with the guns and revolver, the fitting and finish being well appreciated by men who are more or less naturally workers in metal.

The ability to raise and lower rapidly the light from the strong kerosine wall-lamp struck them all as something quite new, and they were equally astonished to learn that the water-like oil was simply their dark petroleum purified.

One and all showed considerable interest in my trip, though, as it was through the Shingphú country, no one would join me. I found that Khamptis do not often travel east or south in small parties. At the same time, though none of them had, as far as I could learn, been to Nongyang, some of the old men gave me information regarding those parts that was more correct than that which I obtained from those who should have known far better. This I partly attribute to most Shans being able to read and write, and their being possessed of manuscripts handed down for many generations. As a *finale* to a pleasant evening, I amused the big and little boys by burning a piece of magnesium tape.

Next morning, while the men were cooking, I was shown all over the village, and the *Chang*, or sacred house, containing their books, pictures, images, offerings, gongs, &c., and into which I believe no females are allowed. It is a building raised some 7 feet on wooden posts, measures some 35 feet by 50 feet, and with six of the central posts continued up to carry a second central raised roof; the caps of these six columns were carved, and under this raised portion was the shrine with some different sized images of Buddha. At one end hung a large cotton *pardha*, with horizontal rows of very well painted figures, about 8 inches high, illustrating their idea of the earth and its inhabitants; near the lower edge there was one group inverted and said to represent the people who lived below us, with their feet upwards! The whole picture was in fair preservation, but from all I could learn, not very old, and executed by a Shan from Burmah, who travelled on to Bor Khampti.

The houses of the people in the village were ranged more or less in lines, and, though long, were parallel, leaving room enough for a road in between each. They were invariably raised platforms with the Jengo roof coming well down over the sides, an arched and rounded end in front, beyond which the platform always projected, so as to enable the people to put things out in the sun and yet be safe from the inevitable pig; it also serves as a sort of semi-public reception place. It seems also a feature of all Nága houses, though not seen among Singphús.

These houses run from 20 feet wide to 100 feet long, contain one family, and, unless large, are often built or re-built in a remarkably short time. While at Bor Phakial the *Gáonbúrá's* house was being re-built, and he told me that it would be done in two days by the able-bodied men and lads of the entire community, who during the erection are fed at the owner's expense,—a custom which prevails more or less all over Eastern Bengal, Assam, and the hills adjacent.

Passing up the Dihing now again after an absence of several years, I was struck with several changes. The *Bapu*, or Khampti yellow-robed priest of Bor Phakial used to teach all the lads to read and write. He had now gone to Burmah, might not return, and the boys could not all read. Again, Nágas are now seen in numbers, and have boats, villages, and lands on the Dihing, where there were formerly none. These people and the Duanias, indeed, seem to be getting more mixed up as time goes on. Kaiyas, or Marwari merchants, or their agents, are now seen at every place of importance, they exchange opium, brass-ware, and cloths for ivory, rubber, and such like. Indirectly, they have been the cause of the extermination of the rubber-trees over large tracts; the ready sale for ivory has also added to the natural tendency among the Nágas to hunt and kill elephants for the sake of their flesh. Not long ago eight elephants that crossed tbe Patkai were so carefully watched and hunted that only one escaped.

There is now a great want of blacksmiths up the Dihing and, dáos cost double what they did in 1870, which is generally attributed to Government purchasing too indiscriminately. At Bor Phakial, ere I left, some twelve Singphús from Hukong came in *en route* home from Assam, having sold all their amber. Happening to ask if they knew certain villages, Mbon and Nmphin, I found they were from the first one I named, and I at once had pressing invitations to go and see them ere my return, they offering to guarantee my safety. The advantages of our rule to Assam was here, as on some other occasions, dilated upon; security to life and property here contrasting favourably with the insecurity there, where there was no paramount authority.

After breakfast the whole village lined the bank to see me off in the *Rob Roy*, which seemed to amuse old and young, boys and girls alike.

Passing Bhaigirot, we were joined by a Singphú and his wife and family in a small dug-out, the woman and an infant in the centre under a little bit of curved roof, the man paddling as he steered, while a boy of 10, and a girl of 12 poled at the bows, keeping pace with us easily and crossing shallows we dared not venture near. By 4 o'clock we reached the Tirapmúk, whereat is situated the village and residence of Kherim Gam, the young chief of the nearest Singphús, whom I knew well, but who was now up at the Namtsik elephant stockade.

The Tirap river falls in on the left bank of the Dihing, after a long course, draining a huge valley along the northern flank of the Patkai, which is densely populated by the Nágas.

A route from this point enters the hills, passing Wadoi, Hongtam, Rangnem, and Yungbhi, crossing the Patkai at 5,000 feet elevation, and afterwards other ridges of similar height, including the Gedak Búm, to emerge at Namyung village in Upper Hukong. It is a long and tedious route, crossing great elevations, and was taken by Griffiths in 1837, there being no carriage *viá* Nongyang, From the Tirap to Namyang takes twelve days generally. In the morning I visited the Gam's houses, a collection of dilapidated sheds, having raised floors, beneath which the pigs luxuriated in unlimited mud. The Gam's mother complained to me, through an interpreter, that the *Nats*, or evil spirits, tormented her with pains, so I gave her a small present of opium and departed.

As a race, the Singphús are more rude and headstrong than the Khamptis, and would make remarkably good soldiers, like most of these hillmen; the pity is they are not utilized.

Kherim Gam's brother paid me a visit ere I left in the morning, and said he knew the Gam would be sorry that he had missed me.

En route we had some fine views of the hills to the south and of snowy peaks to the eastward, the river bed was still very wide, shallow, and full of snags above Tirap; how some of the little canoes that shot past downstream filled with Singphús escaped a capsize was a wonder.

At Ntem we came to the first rapid since leaving Namsang, and a little above it camped on a wide sand, whence a Singphú, a Duania, and a Nága village were visible at once, all quite small and unfortified, showing the security of these parts. Here, again, a tiger came out at night, and prowled about a good deal, as we saw by his tracks in the morning.

By 9 A. M. we were off, after breakfast and a visit to the Duania village, and landed at Saiko at noon, finding the village of six houses nearly deserted. I here saw some very pretty silk ornaments being woven for a bag, but the price, (Rs. 10 for 2 square feet) was more than I cared to pay; the loom was a rude little contrivance 2 ft. by 2 ft. by 2 ft., made of some sticks and bamboos.

I here also measured a peculiar kind of bamboo, 22 inches in girth, with close joints, and from 70 to 80 feet high. I hear they are not known wild, and the internodes are made into mugs, jugs, boxes, and such like. The stem is of a bluish white colour.

Later in the day we reached the Kherim Páni, or old bed of the Dihing, now more or less silted up. There are two other passages through which the Dihing comes in the rains, *i. e.*, the Mganto and Kasán; from this upwards, the river is called the Namrup.

Selecting a dry sandbank, where there was plenty of fuel, we pitched our camp and made all extra taut and snug, expecting a storm at night, which duly visited us; the thin waterproof sheets, however kept everything dry, notwithstanding a strong gust or two. At dawn we were all astir. While some of the people cooked, I went with the others to Bisa, about a mile up the Dherim Páni, a place celebrated as the head-quarters of the Singphús of our side of the Patkai, and the residence of the late head Gam, Banká. There was little to distinguish it from other Singphú villages,—the same long shed-like houses, traces everywhere about of the depth of the mud in the rains, pigs and children. Very few men were to be found, as most of them were out hunting for rubber.

In exchange for some opium, I secured 300lb of clean rice, a few fowls and eggs, also a few chillies. Chautong, son of the late Chief, a smart lad of 10 or 11, was pointed out to me, and Chauing, his nephew, a lad of 17 or 18, was a very fair sample of a Singphú, tall, quiet, and obliging. His father, Latua, about 16 years ago having determined to raid some villages in Hukong, on the Upper Dinoi, departed with his men, saying that, if successful, he would return. As he was not successful, he has not done so to the present time, though he has been frequently asked to come back.

On the way to the boat and camp we found the funeral pyre and monument of the late Chief, a small square enclosure, railed 6 ft. by 6 ft., with pillars at the corners, and long bamboos with strips of cloth dependent, a highly ornamental post in the centre with a kind of carved gilt cap or mitre, split bamboos also at the corners to hold offerings, and a long rich red silk Burmese cloth hung on a bamboo some way off, strips of red and white cloth hung all about on sticks, and waved with a curious effect, the jungle forming a background.

On reaching the canoe I gave Chauing a dozen rounds of Snider ammunition to shoot a tiger which was killing their cattle, and started on up the Namrup, finding that the rapids at once became more frequent and difficult. At places we had to clear out a track or passage by rolling the boulders aside ere we could drag the canoe up, a work that we became pretty expert at, and these same passages were again very useful on our return.

At the Singphú village of Sambiang, or Gogo, we landed and secured a guide named Lah, who was known to Múng, our boatman, and was reputed to have influence among the Tkak Nágas. He owned a gun that he desired to fire off "for luck" ere starting, so sitting on shingle he pulled the trigger several times in vain, as the hammer stuck at half-cock. I advised a hard jerk and turned to go to the canoe. Hearing a fearful bang, I returned and saw the guide's feet and gun pointing skywards through the smoke. He assured me, though in a nervous way, that it was all right, and usually did that when he put in six fingers of powder and two balls!

From hence to Tkak we had three other Singphús travelling with us, and at starting most of us walked over the shingle, gravel, and sand near the river to lighten the boat. I noticed these three men at one place busy catching some insects, and found that they were bugs an inch long which lay under the stones, and which had an unmistakable odour. On enquiry, one of them said they were going to eat them as they were a capital substitute for chillies! and asked me to give them a fair trial!

By 4 o'clock we found a good camping-ground near the Nmbai Muk, on the wide dry sands of an "*era hute*," open on each side and with high forest behind and in front. Fires were soon blazing, every one felt comfortable, and dinner was over by sunset. Gradually the moon rose over the tree-tops and lit up the entire scene. While I enjoyed a cigar, the Bengalis did justice to their *tamakú*, Múng and the Singphús lit up their little brass bowl pipes, and we enjoyed the long evening. There seemed few birds or beasts about, the ripple of the rapid not far off yielded the only sound. Then we discussed Nongyang and the routes: none except Lah had been there. Queer stories abounded, such as that the island in the lake floated about and shifted its position with a change of wind. I heard also that the valley had once been densely peopled with Khamongs or Kamjangs, Aitonias, and Turong Turai, who had all left in consequence of raids by the Singphús.

Some of these same Aitonias being now near Golághát, and the Kamjangs gone to the east, the valley is now-a-days utterly destitute of people. Múng drew some creditable maps on the sand, and seemed to thoroughly understand the relative positions of the various countries, routes, passes, rivers, and mountains, with their inhabitants. From all he could learn, the Singphú track *viá* Sitkha was difficult mainly on account of the want of supplies *en route*, and at best not so easy as that over Patkai. All agreed that the line over Dopha Búm to Manchi from the Upper Dihing was reported both long and difficult, and people very seldom traversed it. After a while, the moon sank, leaving the line of forest opposite strongly marked against the sky. One by one we went to sleep, and all was quiet.

About 6 A. M. we were all astir, boxes packed, camp-chair folded and stowed, tents rolled up, and for once we pushed on before breakfast. A cup of hot coffee and milk with a biscuit was my *chota hazri*. This same prepared coffee and milk is a most useful item, and can be made almost in a moment and milk cannot be procured *en route*. Here and there we occasionally saw some fine mahsir, 20- and 30-pounders, and I regretted not having tackle.

Fine views of the snow-capped hills to the east were seen ere the mists rose, and Dopha Búm looked beautiful in the early light, the shadows sharp and blue, while the snow was of that peculiar creamy white, so difficult to get out of any colour-box, the sky colour behind all being a clean pale grey. A good telescope, to one travelling eastward is a necessity; without it he misses half the "sights" of these parts.

About 11 A. M. we passed the Mganto Múk, one of the three old channels of the Dihing, and saw there some huts of elephant-catchers and rubber-cutters. After passing it, we again found the Namrup perceptibly smaller, several long shallows so bad indeed that the men had all to carry their loads ahead and return to drag the canoe over. My Rob Roy, drawing only two inches of water, of course experienced no such difficulty. Later in the day we passed the entrance to the Nmbai, or Lumbai as some call it, for at times they seem careless which it is. This is not really a river, but a loop from the Namrup which leaves it here and rejoins the main stream above Kherim Páni.

Still later we passed the third channel of the Dihing called the Kasán on the same (right) bank, reaching Namtsik before sunset, and camping on a sand below the huts of the elephant-catchers employed by Mr. Vanquelin. He was encamped close by, and paid me a visit, giving some information in reference to routes, and kindly lent me a smaller boat to assist me in getting up the river Namtsik. I was here induced to take the Namtsik and Tkak route *viá* Sonkap, instead of the one straight on *viá* the Namrup, or, as it is here called, Namhúk, the route by which Mr. H. L. Jenkins and my brother travelled in 1869.

Next morning we re-arranged the baggage, leaving some needless items till our return, and taking only loads which the men could easily carry in the hills. At first the Namtsik was a succession of deep clear pools, among wooded hills, with rapids at every bend. The timber was remarkably fine, the best I had ever seen. Huge *nahars* (*Mesua ferra*), *mekahi* and *gondserai*, rising here and there to immense heights, certainly 100 feet to the first branch, being 10 and 12 feet, or even 16, in circumference at the base. Large tree-ferns and wild plantains rose above on either side, and creepers hung in profusion everywhere, long lines often hanging down into the water, as a rule everything was beautifully reflected in the still clear water. Eventually we reached a rapid towards 4 o'clock, where an immense rubber-tree overhung a deep pool, but with a ledge of shingle intervening, on which there were remains of some huts made by the ubiquitous rubber-cutters, these we speedily demolished, and after levelling the ground, pitched our tents in a line. Somehow this evening, in consequence of the gloom, the weird look of the whole place, queer hootings, and a slight drizzle, the party all seemed inclined to the superstitious, and I had to compel them to cook and eat. After they had done so, I issued a small "tot" of grog to all who would take it, which served to rouse them up. During the night it rained, but, as before, our waterproofs kept us dry.

About 9 A. M. next morning, after all had eaten, we started on, passed some long rapids and shallows, where I had even to get out and tow my *Rob Roy*. At one place I was ahead looking for deer, and enjoying the beauties of the gorge. Some of the tree-ferns I estimated at 30 feet high. Dead rubber-trees were also seen here and there, the dead arms standing out conspicuously against the clear blue sky overhead or fallen over bodily into the river bed.

Suddenly, on turning a corner, I came on some Nága men and women who were out for jhúming, they were all nearly naked, the men wearing a narrow strip of cloth and the women a series of fine cane strips, so girdled as to look like a miniature crinoline that hung down about a foot below the waist, and to which a narrow strip of dirty cloth was fastened horizontally. The women also wore nose-studs (which covered the nostrils) made of pewter, and the size of four- or eight-anna pieces. A profusion of glass beads, as usual, made up for the scantiness of the costume in other ways, and brass wire rings were worn through the upper part of the ear, from which the red and green skins of a small bird depended. Brass wire bracelets, a bead coronet, large red cane loops in the hair, two bone skewers, and shin-rings seemed to complete the outfit. Two lads of 16 or 17 were quite nude.

None of them could speak a word of Assamese, and seeing me alone they were considerably astonished, especially as but one or two of them had ever seen a white person before (when the surveyors were there). Though taken aback, they evinced no distrust, and by signs I called the lads to haul my canoe up the top rapid; soon after my followers came up, and my guide could talk to the lads. They were from a village up on the northern flank of the Patkai. The dress and general appearance of these Nágas was almost precisely the same as of those found up the Tirap valley, twenty miles west.

As we ascended the Namtsik it maintained its picturesque look, a succession of deep still pools, often overhung by rock and trees, shallows and rapids here and there blocked by fallen trees, at times long ledges of dark slippery rock with narrow channels, through which the river rushed, making it difficult to get the canoes over. In places the gorge was almost in twilight, in consequence of the masses of foliage all around and above, where it was not always possible to see much sky. The large whitish trunks of immense trees (*hulong* and *mekai* more especially) here and there rose very conspicuously against the darker background; there were also many large trees that seemed new to us. *Húlúks,* or Hylobates, the black gibbon, were very common, and made the forest echo with their hallooings. The great hornbill, too, was seen in flocks of twenty and thirty at a time, and could easily be heard, as their wings seemed to rasp the air, from a quarter to half a mile off. Otters were common, and made off with a great fuss; no doubt, from the signs we saw, they have a nice time of it.

At one place we came to a huge *mekai* stem hanging or projecting out in the air from the jungle on the left hand; after passing under I got out of the canoe and scrambled up on it, the stem was fully four feet thick, and projected about thirty. On walking back on it, and dividing the jungle with my knife, I found it was poised on its centre on an island, and that an equally large portion overhung the other branch of the stream,—it had evidently been carried along and lodged there during some big flood.

Towards the afternoon we began to get glimpses of dark green and blue forest-covered hills not far off to the south, the group of Sonkap Búm on which there were several Nága villages. The highest peak of the ridge is about 3,000 feet, and as it stands well out north of the main range of Patkai, it affords some magnificent views.

At 5 P. M. we arrived at the mouth of a small dark gully, which the guide said was the route to the Tkak Nága villages. Here we camped, and in the early morning arranged all the loads carefully. Three men were then left in charge of the boats, while the rest of us went up to the village.

For some way the path led up the rough and slippery stream bed, subsequently over a level spur, through clearings, where we had to scramble from log to log and walk along large and small tree-stems at all angles of inclination, the ground being as a rule completely hidden under a thick mass of creepers, foliage, and smaller lopped branches, all drying so as to be ready for being set fire to about March.

How the leading men kept the *path* under such circumstances was wonderful, for no trace of a track of any sort was visible. In some forest beyond we met a Tkak Nága and his young wife, who were rather taken aback on seeing our party. A palaver ensued as to which of the two villages we should go to, and during it we suddenly saw a long string of Nágas advance in single file, and, the path being very narrow and in dense undergrowth, they had to pass us closely. As they went by many spoke to our guide, and some stopped and gave him some tobacco, asking who we were and where we were going, many had flint guns, and all carried the Khampti dáo. Generally, they passed me hurriedly and seemed more comfortable when they had got by, then turned round, and stared. Those who had loads carried them in a conical basket (the Nága húra) by a strap over the forehead; more than half had spears, and all wore the little cane crinoline and small strip of cloth passed between the legs which forces the testes into the abdomen, a usual custom among these Nágas (East). They were not tattooed, and hence looked much paler in the face than do the tribes who live further west. I found they had all been summoned by a Singphú Chief to assist in building him a new house.

After passing through another *Jhúm* we reached Tkak, a village consisting of ten houses on a spur facing the Nambong valley, where the guide made arrangements for us to stay in the outer end of the head-man's house After an hour's rest, the carriers went back to the boats for the other things, and the whole party came up. While they were away I had breakfast. It was no easy matter communicating with these folks, as the only language they knew besides their own was a little Singphú. Lah, the guide, and Múng, the boatman, hovever, were generally somewhere at hand to interpret.

The village was evidently not more than five or six years old, as I saw the stumps of the forest trees everywhere about, and often the stems as large logs. The houses were not arranged on any plan, but just built where the owner had a fancy, on a fragment of level eked out by posts, not over 30 or 40 yards apart, no two houses consequently were on the same level or faced the same way. They were more or less on the same pattern as are all the houses of the hill tribes in or about Assam except those of the Gáros and Khásias, *i. e.*, a long bamboo shed, with floor raised on posts some 4 or 5 feet.

It is singular how this custom survives even among people who have left the hills and been resident in the plains for some 500 or 600 years, as for example the Deodhaings, who came in as *Ahoms* in 1228, and are now seen occupying a few scattered villages not far from the Disang river, in the Sibságar district. The Aitonias and the Miris also afford other examples. The custom in all cases seems due to the necessity of keeping the floor out of the reach of pigs and goats.

It may be called the "Pile platform" system, and to some extent marks a race distinction between Aryans and non-Aryans. It is probably the same system which occurs throughout the Malay peninsula, and has latterly been traced in the Swiss lake-dwellings, and present Swiss châlet.

Among the Nágas, where houses have been built on a declivity, I have seen one end of the house only a foot or so raised from the ground, while the other end, supported on bamboos 30 feet long, overhung a fearful gully,—the little platform at the extremity, on which the people sit out and sun themselves and their children, having no rail or protection of any kind.

The people seemed very quiet and civil, but were more or less curious to see our things. While they were examining them we heard a loud wail raised in a house not for off, that made all mute, soon after another, and they all went there in a hurry, gradually joining in the chorus. It turned out most unluckily that the old *headman*, who had been very ill for some time, took it into his head to die *just* after our arrival. It made my guide and Múng and the three other Singphús look serious for a while Guns began to go off, too close to sound pleasant, and were pointed about promiscuously; I began to think matters were getting serious, as the son, a grown man, rushed about demented, yelling and slashing and cutting everything within reach of his dáo,—floor, walls, baskets, all got a fair share of his fury, an unlucky cock that ran past lost his head, and dogs kept aloof.

Guessing that a good deal of the rumpus was "a form of sorrow" in these parts, I kept our party as unobtrusive as possible, and in about half an hour the bereaved son came to me, quiet, but crying, and asked for some caps, as they had a nipple-gun which they desired to use in the row. On giving him a few, I remarked that had I known the old gentleman was so nearly dead, I should have gone to the upper village, but he explained that his death had been daily expected for some time, and I must not be put out at the noise and fuss, which was their custom. He turned out afterwards to be a very decent and intelligent fellow, and rendered me good assistance.

The row still going on, I took my note-book and strolled out by the path towards Patkai. A fine view which I had of the Namtsik valley shewed it to be wide, and filled with low rolling hills and undulating land, and not nearly so steep or high as I had anticipated from the shading on the Government maps, which extends as far as this village.

Patkai here at least presented a high and tolerably level ridge to the south at 3,000 feet up to 6,939 feet at the Maium peak, all seemed deep blue, instead of green, forest-covered to the top, and at some five or ten miles off, the Nambong river below, dividing it from Sonkap, and receiving the drainage from both sides, to flow east and join the Namrup. The six or seven large spurs from Patkai are all included in the prospect.

Early in the evening the men arrived with the remainder of the loads, and I pitched the tent in the usual form on a clear little flat just at the outer edge of the village. After dinner we had a large audience as usual of Nágas, men and women, the latter being in the outer circle. The object of my visit (*i. e.*. to see Nongyang lake) was explained, and routes in various directions discussed. There was but one to the lake from hence, *i. e.*, *viá* the Nambong to Núnki, a stream between two of the large spurs, then across Patkai by the regular and only pass. They made many enquiries regarding "rubber," and I was able to show it to them in various forms, as waterproof sheet, coat, air-pillow, elastic rings, &c. It was little wonder that they were interested, inasmuch as till about a year ago any enterprising Nága could earn 2 to 4 rupees a day by its collection, and both the inhabited and uninhabited tracts on each side of Patkai had been explored.

Here, as before, remarks were freely made in favour of our Ráj, which was favourably contrasted with the state of insecurity known to exist in Upper Burma, and here also before our arrival in Assam. They spoke of the visit of the Survey party some years before, to which they made no objection. A good many of them had been as far as Bisa or Mákúm and Tírap, but few to Jaipur, and very few indeed to Dibrugarh. They seem to work pretty hard, the men and boys in clearing the forest *(jhúming)* and house building, while the women plant and weed the crops, reap, look after the family, cook, &c., though the carrying of water in the bamboo tubes, often for considerable distances from some gully below, is no joke. They also bring in immense loads of firewood from the clearings, but as a rule the women and girls are remarkably sturdy, and think very little of carrying 150 or 200 pounds on their shoulders and backs, slung by bands across the forehead.

Like most Nágas, they have no special agricultural implements, but use the ever handy dáo, which is also a weapon. Spears were pretty common. They were iron-headed and of the elementary form common all over the world, the other or butt-end often having an iron spike to help in climbing; the young men also seemed fairly expert with the crossbow.

Old flint muskets of English make, were not uncommon, the powder being made on the spot by the Nágas, nitre collected from the sites of old cow-houses; where the sulphur came from I could not ascertain. The charcoal was made of the wood of citron-trees, *jaura tenga* of the Assamese. This powder is not granulated or very strong, so large charges are necessary.

At 9 A. M. the boiling-point thermometer showed 209°. 60, the temperature of the air being 64° F.

After a fine cool clear moonlight night we were up at dawn, and our party had an early breakfast, the loads were carefully arranged, and I prevailed on five Nágas to carry extra rice for us.

Leaving the village at 11 A. M, we at once passed through the last year's *jhúm* towards the south-east, and down a long spur, towards a tract of low wooded hills, on one of which we passed the last Nága village in this direction, a small one of some five or six houses. There are no Nágas east of the Dihing and Namrup. Thence through their *jhúm* partly felled, and on down to the bed of a stream, along which we travelled a little way, coming out on the Nambong, a small river that carries the northern-drainage of the Patkai east to fall into the Namrup and Namphúk. There was not much water in it, though here and there we saw pools; the bed was rock, boulders, gravel, and sand alternately. How they kept to the path it was not easy to see, for we often cut off bends by suddenly parting the jungle and finding a rude track below,—at times even this was not to be seen, as it was over boulders and rock. Still, the faculty of keeping or finding the track is part of the savage nature all over the world, and when studied and understood is not at all wonderful On opening their eyes anywhere in the jungles, these savages can read the surroundings like a book, it is their book in fact, though sealed up, or the signs invisible, to the civilized intelligence.

Near the mouth of the Núki, which drains a valley between two of the large spurs of Patkai, we camped at a clear spot, where there was also plenty of firewood, and wild plantains, for the guide, Múng, and the Nágas to make a hut of.

Bedded rock, laminated shale, was passed frequently inclined at 60° or 70° dipping south.

At dusk, when cooking, the stones under the fires, or supporting the various pots, frequently exploded, so that the operation became rather exciting, and it was agreed by the Bengalis that the Nambong Deo, or spirit, had objections to it; however, it was all over ere long, as we were hungry, and, on the moon coming out, we spent a very pleasant evening. Stories and jokes abounded; now and then a general howl was raised to warn off a tiger that prowled about, though none seemed much afraid of him (his tracks were fresh and plain on patches of sand not far off in the morning). At 9 P. M. the thermometer stood at 60° F.

After breakfast, at 9 A. M., we again started on and soon struck the Núnki, up and beside which we travelled for some hours, and which in places is anything but easy walking, and, though bare-legged, I found shoes were necessary. Here and there a man had an ugly fall, and it was well the things were well packed, as the loads had rough usage. Gradually it began to rain, which was a damper in every sense, as where we went on the banks leeches abounded, and in the river bed the rocks and boulders and the smaller shingle became very slippery. A small lean-to shelter or old hut marked where the path left the Núnki bed to ascend the spur, and here I made the men halt. The Nágas and Singphús and Múng at once pulled out pipes, so I made my fellows all take a little rum "medicinally." We then started on and found the first 1,000 or 1,500 feet pretty steep, the path being unmistakeably visible, both by the track below and the blazes on the tree stems of all ages, from one to ten years; a peculiar feature of the path was that it very seldom varied from a dead level for perhaps two miles or so, and never descended anywhere as much as 30 feet, and was in the main fairly straight. Vegetation began to vary a little, not only trees, but plants and herbs of new kinds were seen, and after about a couple of hours' pretty easy walking the track got steeper and steeper, where the long spur joined the main range. At last the climbing became no joke, to the men who had wetted loads especially, and we had frequently to rest; half an hour or so of this work brought us through some *kako* bamboo to the crest of the ridge, which was quite narrow and densely wooded, the views either way being simply of clouds and mists.

At about fifty yards from the path we camped on a small level, and the rain left off in time for the people to hang out and dry their clothes, blankets, &c. The only thing now needed was what we had too much of already, *i. e.*, water.

Some of the Nágas, however, went away to the bamboos, getting about a gallon from the joints, which sufficed for cooking my dinner and brewing tea for all the party.

I repeatedly told them there was a spring of good water some 400 yards down the path on the east side, in a gully off the same, but both Lah and the Nágas denied it, and said it was useless to go. Subsequently, when at Bor Phakial, I heard that it was true that there was water there. At 9 P. M. water boiled at 205°. 75, air being 57° F. Considering our wetting and fasting, the people were all in very good spirits, and we were anxious to see through the veil of mist to the south,—but no such luck, the night proved foggy too. In the early morning I put my orderly to watch for the view at a part of the crest where there was a patch of grass some two acres in extent. At about 8 A. M. he reported by shouting to me that the clouds were clearing and mountains showing beyond. I at once went up with my prismatic compass, and now and then the driving white mists or clouds that swept up showed signs of parting. Suddenly below us, and some way out among the clouds, we saw a patch of bright yellow, and another to west, of blue, both for the moment a mystery. It turned out the yellow was dead grass on the plain in sunlight, and the blue was the lake.

In a little time it had so far cleared that I secured bearings of the most conspicuous features, including the peak of Maiûm, to the south-west, which is just 7,000 feet high. While I made a hasty outline sketch, the men struck the camp, and by 9 A. M. we were off down the path that leads to the Nongyang ford and from thence *viâ* the Digum Búm and Loglai Kha, to Namyong villages in Hukong.

After a short time, having first consulted with the Nágas, we left the path and struck south through the jungle, down across deep khuds and over little hills, where the load-carriers had a job to get along, especially those in charge of the canoe, the incline in many places being 50° and 60° from the horizontal. But Nágas are at home in the jungles, and soon piloted all of us down to the level, which we reached far sooner than we expected, but found it so soft and swampy that it was too dangerous to go on, and we had to return to the flanks of the smaller hills trending towards the lake. After about an hour's walk we came to where the bottom was more firm and sandy, and we crossed to the low wooded hills that run along the northern edge of the lake, passing among which we suddenly emerged on it and had a splendid view. Giving directions to pitch the camp on the little hill-side facing the lake, where there are some large *hingori* trees, we crossed a patch of reeds and stood on the actual margin.

The Nágas, Singphús, and Kamptis at once began some sort of puja, each after his own fashion muttering away, bowing, and touching his forehead with some of the water. I then had the canoe launched, but they all begged me so hard not to take the gun, that I left it, and the wild fowl which I saw out on the lake's opposite shore got off. One and all said we should be sure to have heavy rain if I fired, or a bad storm, as the Deo of the lake would be certain to be offended. So I turned the *Rob Roy's* bow out, and felt the peculiar pleasure of being the first who had paddled on that sheet of water, certainly the first who had done so in a *Rob Roy*. As I went out I saw the margins were low all around, and no forest near, except where I had started from.

The basin of hills, beautifully reflected in the smooth water, swept right round in a green-blue curve, the valley of Nongyang extending south some six or eight miles as a dead flat covered with grass and scrub. The whole bottom of the valley was flat, except where three small tree-covered hills stood like islands in the sea of grass east of the lake. The banks were so low and flat all around that I could see a considerable way inland from the canoe. Turning westwards, I began the circuit of the lake at some 100 yards from shore, and soon found little bays and headlands, though no sign of out- or inlet. When half round, I looked across and saw the smoke of the camp fires rising blue against the foliage. The water-fowl had apparently crossed over there. Towards the south-east corner I passed up a channel, separating banks barely a foot high, covered by a small sedge, and found I was rounding the island, a very low flat patch of an acre or two in extent, with some very scrubby trees on it.

The water was here so shallow, being often barely two inches deep, that had not the silt been soft I must have stuck. This silt, however, was so soft and light that the paddle, held upright in it, sank in 2½ to 3 feet from its own weight. Of course I got out of such a dangerous corner as quickly and quietly as possible,—an upset there meant certain death.

I was surprised to see neither stones, sand, nor clay, all was silt and peat, except a little sand where I had started, the outlet was from the south-east corner not far from the island. After about an hour's paddle I returned for breakfast, made all snug, took some observations and memo. sketches, and in the evening went out again, going nearly round, and finding several inlets. The number of wild fowl must be considerable, as the edge of the lake was almost everywhere denuded of sedge or vegetation for a couple of feet in, and had plenty of feathers trampled in. At one place I saw marks made in the bank by the two tusks of a large elephant at water-level, evidently one which had got in and could not easily get out, of which there were other signs beyond. Report says there are large numbers of tusks in the silt everywhere. Other tracks were very common, though no game was visible, but no deer, buffalo, nor indeed any large game tracks except those of elephants.

In the evening we had some strong puffs of wind, and we made all taut for the night, after dinner settling with the men who were to take turns at watching. The Nágas also drew creepers and some dead branches and leaves about us outside, so that anything approaching would at once be heard, then we turned in and slept soundly.

In the morning I started the five Nágas to their homes they were not wanted and wished to be off, and then prepared to sketch the lake and hills and get bearings. This occupied me all day, and we prepared to start next morning for the Nongyang ford, where I desired to search for the inscriptions in Ahom cut some 500 years ago near the ford, where the road crosses. The men, however, whom I had sent ahead to find a path, returned in a great mess, and declared it utterly impossible to cross the valley, as the peat, or *pitoni*, was too soft and deep to bear their weight. This was most unfortunate, and a second attempt, backed by a good prize if successful, failed equally, so there was nothing for it but to return to

Patkai at any rate. I then determined to lash my canoe in the large arms of a big *hingori* tree, and did it so as to prevent its being blown, or shaken down, resting it bottom up on three boughs; being of a very lasting timber, it may remain safely for some years to come, unless elephants can reach it, which I doubt, or the Nágas hear of it from Lah.

We therefore, instead of crossing for the Nongyang ford, started back by the road we had come, and found the return to the pass comparatively easy, it took but 2 hours or 2½. There being no water on the crest, I had made the men cook and carry extra rations and water in my kettle. From the crest, it being a fine clear day, I made a sketch and took bearings again, also by boiling-point thermometer at 4 P. M. and 9 P. M., and again at 9 A. M., secured the altitude, which was worked out for me by Mr. H. F. Blanford, to whom all the observations were submitted. Apparently, the crest of the Patkai at the pass is about 3,500 feet above mean sea-level, probably 3,000 above the bed of the Nambong on the Assam side, while the Nongyang lake and valley stand at about 2,200 feet, showing, say, nearly 1,300 feet difference in the levels. The valley of Assam, in fact, being much the lowest, and the Nongyang lake lying about on a level with the Sonkap villages.

From the pass, looking southwards, the valley extends as an irregular triangle for some eight or ten miles north and south, by three or four in width, the lake being near the Patkai end where broadest, and being itself, say, three-fourths by half a mile. Apparently the lake once filled the entire valley, the junction of the level with the hills all around being a well marked line; the surface also mainly consists of grass and scrub jungle, and showing very few trees, is apparently all swamp. The three small conical and wooded hills east of the lake, and at, say, one-fourth to half a mile distant from it, look precisely like islands, the exit from the lake passes close to them.

Later in the day I attempted to get along the crest eastwards, but it was an interminable succession of gullies or saddles and ridges, which would need a whole day to explore, and the dense forest precluded a view in any direction. At a mile east a peak rises which dominates all around and beyond. While we were camped on the summit a party of Singphús crossed from Assam *en route* to Hukong for buffaloes. Starting from the Nambong that morning about 9 A. M., they intended making the Nongyang ford ere dusk, thus crossing from water to water *in one march*. Three or four of them had guns.

Early on the 14th we struck the tents, and started back down the northern slope, seeing the tracks of cattle which had crossed since we did. In about three hours we reached the Núnki, where we had breakfast. I here caught some orange coloured butterflies which seemed new to me, and measured a *mekai* sapling which was 10 inches diameter at foot and 5 inches diameter at the first branch, 60 feet from the ground.

It was a lovely morning, and, excepting for one or two bad falls, we got down to our old camp easily and quickly, finding three Tkak Nágas there. At dusk we heard a barking-deer not far off, a Nága took his gun and quietly disappeared, a loud report soon after told us he had succeeded, though, being dark, he could not trace it; by dawn, however, he was out and returned with it on his shoulders. I gave him some beads for a leg. These men knew the country pretty well, and had cut rubber on the Upper Loglai. They said large numbers of Nágas from our side go east on the side of Burma, taking food for twenty days, and in parties of thirty and forty or more. It is a large tract of country, and totally uninhabited.

After breakfast, about 9 A. M., we all started on together up the Nambong, thence over the undulating forest land and low hills, *jhúms*, &c. One of the Nágas we dropped at the first Tkak Nága village, and soon reached the one we had camped in at night, where we rested an hour and waited for the guide, who had loitered behind. In the *jhúm* close by I observed each person's little store-house of yams, chillies, pumpkins, &c. quite open and exposed, often without doors, yet I was told on all sides that the contents were quite safe. So close to the path were the things, and so very tempting, that I had to collect and warn my people against innocently supposing they might stoop and take what they saw, or there might have been no small row. While resting in the Tkak village, a Nága woman came and presented me with a large basket of *moad*, or rice-beer, which, after tasting, I passed round; it was not so good as that of the Nágas living west near me. Like the Singphús, these people make very neat wicker-work baskets, and line or plaster them with rubber-juice, so as to be not only water but spirit-proof. They also make pretty bamboo mugs, with two handles in loops, some of them absurdly like Dr. Schliemann's early Greek pottery.

When the guide joined, we went on and climbed another 500 or 600 feet to the Upper Sonkap village of some ten or twelve houses. Several women and big girls at once, and without a word from us, brought out and handed over bundles of firewood for nothing. It was done so quietly that I take it to be a regular custom, and one form of welcome. Water, however, was at a premium. Some for present purposes was given us in huge bamboo vessels, but I had to get the Nága boys and girls to bring more at a pice per tube. Even then, there was a short allowance, till the spring filled, or they found a lower one next day. I went to see it, and how they managed to get down and up in the dark surprised me. The want of water has a perceptible effect on the complexions of these people,—the older women seem especially partial to charcoal dust and ashes.

We pitched our tents in a row, on a clean piece of ground offered us among the houses, and after dinner a most motley crowd of people came round our fire, to whom I had more or less to show myself, my clothes, guns, lamps, &c.

The imperceptible effect of custom was curiously seen in many very trivial things here, as elsewhere: for instance, though more or less all prepared for wonderful guns, I found that whenever I opened the D.-B. B.-L. suddenly and the barrels dropped, there was an instantaneous "Awa! he's broken it," the idea of a joint at the breech being the last to occur naturally. At last we got to sleep, after telling them all I would remain over the next day, perhaps two, and there was plenty of time to see everything.

Early next morning I was up, but the range of Patkai all along was invisible. In the dark, however, I must mention the Nágas were up and the women and girls at work and going for water. The muffled tread of many feet and tinkling of the many shin-rings awoke me, and they came back in the dark; meantime, the dull "bump, bump" of the rice husking went on in every house till dawn.

I took a turn to the upper few houses of the village, some 300 yards east, while my man was getting *chota hazri* (little breakfast) for me, and on my return in half an hour, failing to make a sketch east on account of the mist I found a lot of the women and girls squatted about weaving, and "got up regardless," in beads, red hair, red cane, and such like in lieu of costume, the *tout ensemble* when some of them stood up was certainly most remarkable. The long and in some cases profuse straight black hair was secured on the poll of the head by two large (engraved) bone hair-pins, from the projecting ends of which, behind, beads depended, round the head or over the hair some twenty rings of scarlet cane were fastened, and over the forehead a bead coronet. A large brass ring hung from the upper edge of each ear, a bright green bird's skin dangling below to the shoulder; the peculiar nose-studs, or nostril-plugs, completed the head. A profusion of large small bead necklaces hung from the neck, some close, others long and reaching to the waist. Pewter armlets, bright and dull, on the arms, and wristlets of brass of various sorts, from plain wire to a curious piece of casting, were on the arms, now and then red goat's hair being attached in a fringe or bunch. Round the waist was the curious series of cane rings, some fifty or sixty, more or less attached to each other, or long strip coiled round and round, but generally worn as a little crinoline, very much too short, and which was helped out by a strip of native-wove cloth, going all round, but ends not joined,—the whole contrivance barely decent. Red cane bands were often worn round the leg below the knee, as is the custom with the men, and then the remarkable pewter shin-rings, four or five on each leg placed on edge in front and tied round the leg in some way that prevented them all from slipping down. In walking or running these made a pretty loud tinkling as they touched each other.

To-day the belles of the village came out strong, they seemed for once to have washed themselves and donned all the finery available. As I went about with an interpreter, looking at the weaving and little sticks used as a loom, and asking all sorts of questions, they seemed as much amused as we were, and when laughing, the whole costume seemed to join in, the nose-studs in particular. I could hardly help every now and then thinking what a sum one would realize as a model at the Academy life-class, especially some of them who were remarkably well made and not bad-looking. The children, as a rule, were not at all prepossessing, and had heads and faces round and uninteresting as a turnip, the nose a little round knob, and little eyeholes as in a mask, utterly destitute of modelling. The men's costume was limited to the cane crinoline and a jacket without arms, occasionally a necklace and topí with hair or feathers; but they do not dress themselves as gaudily as the women, or as the Nága men further to the west.

The looms I saw were simply two little upright sticks of any sort driven into the ground, and one loosely tied across the offside, to which the woof was wound, another similar one being in front and looped to a band, against which the weaver leaned back to pull it tight. A huge flat paper-knife seemed to complete the arrangement, being some four inches wide it, when placed on edge, opened out the strings enough to allow a little ball of thread to pass through; letting the said paper-knife lie flat seemed to open the strands the other way, and the little ball was rolled back again: with this they wove cloths with a simple pattern, which were from a foot to eighteen inches wide. Several were weaving men's cloths of the strong *bonrhea*, 5 feet long by 3 inches wide, and with ornamental ends.

After an early breakfast at 9 o'clock I started with several men for the summit of the hill, and after a steep climb reached it and found it had been *jhúmed* about two years before, so we set to work and in an hour cleared off a good deal, enough to enable me to see round and get bearings. The view was a fine one, bounded on the north by the Mishmi Hills, north-east by Dupha Búm 15,000 feet, well snowed down to 2,000 feet or so from the summit; east the Phúngan Búm, 11,000 feet, was well seen, but had no snow on it, the distance about 53 miles; thence round towards the south I saw the eastern prolongation of Patkai, with the depressions in the range where the old Burmese route crossed, at probably 1,500 or at the least 1,000 feet lower elevation than the present pass of 3,500 feet. Over and beyond this marked depression could be seen a rather high group of hills,—a feature visible here alone, as elsewhere the range of Patkai hid them from view.

The hills seen beyond were expressively called the "Loglai Patkai" by the Nága headman, who caught me making an outline and taking bearings. They may be the group that lie between the Loglai and Turong rivers. From this point west, the entire line of the Patkai crest was visible, but slightly undulating till near Maium, where there seemed to be several depressions, before the rise to the 6,939 feet of that peak. The seven large spurs, running north and more or less at right angles, were very distinctly seen with their intervening valleys, all, like the main range, densely wooded, the Nambong draining all that was lying in this direction. Some of the more western spurs of Patkai were sufficiently high, and form the sky-line, as Longvoi Pipoi, and Nongya Sapon, projecting into the Namtsik valley, which lay west, and seemed filled with low rolling hills, one behind the other, for a long way. Towards the north-west at some miles off, and seen more or less on end, were the ranges dividing the Namtsik from the Tirap basins, some peaks, as 'Mung phra,' Kongtam, Rangatu, and Yungbhi, were from 2,500 to 4,000 feet high; further west again about Makum, the hills gradually sank to the level of the plains, in a sea of forest. I observed that the mists in the early part of the morning, or before noon, poured for hours over the lowest part of Patkai above indicated, like milk from a jug, and the phenomenon was repeated daily during our stay, thus marking it unmistakeably as the lowest part of the range. East of this part (which seemed the Upper Namrup on our side and Loglai on the other) the range rose again, though not to any great height. Between Patkai and Dupha Búm, beyond Dihing, rose a fine group of hills called by these people Miao Búm, and between Miao and Sonkap, on which we stood, were the small hills called Nan-nan and Tantuk, between which Pemberton says the old route lay and the Namrup flowed, under the name of the Nam-huk or Nambok, and near the village of Namphuk; the alternative route to the Núnki, *viá* Nambongmúk, passed hence also, it was taken by Mr. H. L. Jenkins and my brother some years ago, in 1869.

Towards the afternoon we descended through a clearing, where we saw boys lopping the tree branches that overhung a gully, seemingly a very perilous job and needing some nerve, as the branches fell quite 500 feet. In the evening, an old Nága gave many particulars about the Nonyang lake and valley, and the previous inhabitants, routes to Burma, &c. He gave the length of the valley as one day's journey, and says he lived with other Nágas once on the hills overlooking the western end of the lake, where there are now no villages. The original inhabitants were, he said, Khamjangs, Aitonias, and Turong Turai, confirming what I had heard before, and that Nágas inhabited the hill ranges around on the west.

At night we had again a large audience, the men and boys seated round the camp-fire, the women and girls in a circle standing outside. I was asked all sorts of questions about my country and people, the Queen, railways, and steamers, on which Múng had been dilating more or less.

Next morning after *chota hazrí*, I started eastwards with my orderly and a couple of Nágas, and got into a *jhúm* on the eastern flank of our hill, from whence I obtained a fine view. At noon we returned and had breakfast and after a rest, I made an outline sketch of the Namtsik valley, and then saw a fine sunset. I also fired a few rounds from my revolver, at a mark, to the delight of the young men, who cut out all the bullets at once from the old stump. Some eight or nine Kessa* Nágas came to the village from the other side of Patkai, and were pointed out to me. They were, I could see, in various ways somewhat different to the Nágas I was among. Paler in colour, more ugly and sinister in looks, destitute of arms or of ornament, and each wore a large wrap of bonrhea cloth. They also did not tattoo. It was difficult to communicate with them, as only one or two knew a few words of Singphú, and their "Nága" was also very different. The Sonkap headman and others told me they belonged to a tribe who sacrificed human beings, and, as this was news to me, I took some pains to get it confirmed by them. The Nágas replied by explaining that it was done as an old custom, to secure good crops when there was likelihood of failure, and not through wantonness, and that they explained this to the victims, men and women, captured or bought, who were tied to a stake, and killed, as far as I understood, by a cut across the abdomen transversely in some way. It would be very desirable to verify this on the spot, and, if it proved true, endeavour to suppress the practice of such a custom at our doors.

The entire Nága question must be taken up sooner or later and properly settled, or it will be a source of constant trouble to us. We have had very fair success with the Aryan populations of India, but seem to fail signally among non-Aryans. Dr. Hunter's remarks regarding such races are worthy of the most careful attention. They seem to need a combination of the autocratic and patriarchal,—an essentially *Personal* as distinguished from a *Departmental* Government, with its cloud of Babus, a race mortally detested by the Nágas and such like tribes (and with reason). This indispensable element of personal regard our Government seems to systematically ignore, the most potent tie which can connect us with these people is frequently and recklessly severed, with results that act disastrously on them. Yet, instead of blaming ourselves, who should know better, we blame the savage, and wonder at the result. In time no doubt these people might be educated and understand us and our institutions, but in the meanwhile they need an intelligent "Chief" over them, rather than a department, and one not changed for every little frivolous pretext, but one who will elect to live and die among them and work for them. From being a set of treacherous and turbulent races, they would become a prolific source from which our Indian army could recruit most valuable and trustworthy material. They are particularly susceptible to personal kindness. It is to be lamented that with the opportunity and power to govern them successfully, there should be deliberate blundering through thoughtlessness. Such men as Captain John Butler are needed, they are few and far between perhaps, but are still to be found with a little trouble.

---

* Nágas on our side of Patkai are called "Hijud Nágas," or cooked, *i. e.*, civilized, those on the Burmese side are Kessa = Kutcha, or raw.

But to return to these Kutcha Nágas; what they were like in their houses I can't say, but here they wore a sinister truculent look, and there was more difference between them each individually than is usual, though the colour was somewhat uniform; they wore the hair cropped to a horizontal line across the forehead, as is so common among all Nágas. They spoke very little, and in undertones, to each other, their numerals, like those of all the races in Eastern Assam, being on the same basis, with minor variations.

At last we got to sleep, and after a pleasant night were up at dawn. I asked the Nága headman to assist me in procuring some *curios*, personal ornaments, costumes, &c., but it proved to be no easy matter. They might give away, but how could they sell such things? Of course, if *given*, a present was expected in return of, say, at least double value.

At first they quite failed to see why I wanted their costumes and ornaments, unless for some unstated purpose, not a good one,—to perform magic with, perhaps; but gradually I got them to see it as a harmless and laughable peculiarity of mine, and I secured a few of the things, though at exorbitant rates. I got them to see it best and easiest by selecting a girl well got up, and saying I would like to take the "lot" as it stood, bar the girl. Nága-like, they could not resist the temptation to palm off bad things for good. Eventually, we got what we wanted, had breakfast, and, while packing, I showed them all another village through the telescope. Their astonishment was considerable, and, as usual, they thought the village had been brought near by magic.

Ere midday we were off down for the Namtsik, where, meeting a young Nága I secured some samples of his gunpowder in exchange for some bullets, on which he set a high value. The powder was kept in dry bamboo tubes, with a stopper and bit of cloth. I also made him sell me his jacket and crinoline, or at least three-fourths of it, for he said if he went up home without it, he would be a laughing-stock to all the girls, even though he had his cloth on. Our men soon appeared emerging from the gully, and we shipped everything and got off, the dropping down stream being very pleasant work, and the rapids giving very little trouble. At one place, a long deep pool shaded by overhanging rocks and trees, we found a party of Nágas fishing; their mode was to stake the shallows above and below, and set a series of traps, then to hoe or dig in by stakes or dáos a lot of the bright red fine clay of the bank at that place, which renders the water like pink cream, whereupon the fish in the pool clear out, and in so doing all get caught. They go about, too, on bamboo rafts, and beat the water, to scare the fish; generally each person gets two or three big fish to take home. We shot along pretty quickly, and at last camped on a bed of shingle at the river side, where there was plenty of grass to sleep on, and firewood. Here the *dam-dums*, or *moans*, small flies on silent wing, tormented us. Their bites or stings itch the next day and often cause bad sores.

Next morning we got off early, and shot some rapids in a way that made us all hold our breath. The river had risen somewhat. At one place we came to a huge rock that rose out of the Namtsik, in a deep pool, and it had four large sculptured circles on it in contact, each about a foot in diameter, and containing an eight-petalled rose,—whether a Hindu or Buddhist emblem I cannot say. It is, however, well known to the people about, who declare it a work of the Ahom Rájas many years ago; a part of two circles which is missing is said to have been struck off by lightning.

By 4 P. M. we reached the mouth of the Namtsik and the elephant-stockade, having taken in our remaining stores we pushed on to the Nmbai múk the same evening. I had seen the young Singphú Chief, Kherim Gam, at Namtsik, and he agreed to meet me at Tirap.

Next day we pushed on, passed the Kasam, Mganto and Kherim Pani, into the Dihing river, landed at Gogo and saw some peculiar men, said to be Eastern Singphús, from far up the Dihing; the headman wore a peculiar Chinese-looking cap, jacket, &c., and had a most celestial look about him, he proved kindly and intelligent, and made some shrewd remarks. I also saw here a huge pair of *jangphais* or amber ear-plugs, worn by a very old but remarkably good-looking woman. She would not part with them, though I offered a large sum, their full market value in Assam.

Again we started on and shot some very bad rapids in a way that astonished all on board, in some places we went for fully 300 yards at about ten to twelve miles an hour flying over the boulders only *just* below us, and which seemed to pass like bands of colour,—to have caught in one would either have split the canoe in two, or sent us and it rolling pell-mell into the deep water below.

Múng, however, seemed to know his work, and only once showed a little weakness, when in shooting down a rapid with a bend in it, and that seemed to end in a huge pile of snags and branches, the leading paddlers jumped overboard, and I had just time to jump forward and give six or seven hard side-strokes with my large-bladed *Rob Roy* paddle, which served to convert a frightful upset into a hard bump. We reached the bend above Tirapmúk about 3 P. M., and most of us got out and walked across the chord of the arc on the sand and grass; five or six of the men, who had gone on foot and carried light loads, here joined us, and we got to Tirap itself about 4 P. M., camping where we did before, on the sands, just above where the rivers joined in the fork, and opposite the end of Kherim Gam's village. They soon had the tents up, firewood in, and were hard at it cooking, when my dâk by two men turned up, it had been waiting a week. They also brought a few acceptable stores. Kherim arrived at night, and in the morning came over and we had a long talk together on many matters. He seemed much pleased to see me, and asked after Jenkins Saheb and my brother, with whom he had gone to Hukong in 1868-69. He particularly wanted me to promise to repeat my visit next cold season, and offered to go anywhere with me I liked,—especially Hukong, where he was well known, and has two sisters married to Chiefs. One of these two, over on a visit to Assam came as soon as Kherim was gone and interviewed me. She is married to Dubong Gam, on the Turong, and asked me to visit them, guaranteeing my safety. She was a smart, intelligent little woman, and it was now twenty years since she had been home to Assam. She had her four children with her. Through an interpreter we had a long conversation. She seemed thoroughly to understand the relative positions of the Singphús on our side and hers, and declared the keeping of slaves not so bad after all, and in some cases necessary; at the same time, they all admired the peace and security to life and property seen on our side. As usual, she came with a small present,—fowls, rice, milk, &c.,—and in return I gave her an assortment of strong needles, some threads, tapes, and handkerchiefs for the children. She was soon to return to Hukong, and several of their slaves had come to take her and the children back, a ten days' journey *viâ* the Nága villages and Namyong. As far as I could see, the system of slavery in force in Hukong is not the curse John Bull so often supposes it to be, and seems particularly well adapted to the state of society prevalent there. The slaves, often either Assamese or their mixed descendants, are treated more or less as part of the family, a proof of their happiness being that they do not run away and join our side when possible. Leaving the Tirap, we went down to the small Khampti village of Manmo, where I saw and sketched a pretty little Buddhist chang and school-house with very fair carving about it. For some reason, the Bapu, like the one at Bor Pakhial, has gone to Burma, and they did not know whether he would return. It seems a great pity if Buddhism is doomed to die out here among these people; theoretically and practically it seems infinitely better than what they are getting in lieu of it, *i. e.*, a mixture of the dregs of several superstitions.

We reached Bor Pakhial about 3 P. M. and camped this time up on the bank near the houses and some bamboos, and soon had a collection to learn of our success. A little before sunset I fixed up the telescope pretty firmly, and showed them several canoes full of people in the distance; there was great excitement over it, for, though very far off, the boys kept calling out the names of the girls and women in the boats, and were able to recognize them. As they came nearer it was a pretty sight, and they made the boats travel, as most of them had oars and were paddling. As the canoes were too small to sit down in, all were standing in a row, five or six in each long and narrow dug-out, then they all ran up to see us. Several old men reiterated the story about the people who had originally inhabited the valley of Nongyang, and who were driven out by the Singphús. They also indicated the difficulties of a route east *viâ* Manchi or Bor Khampti, up the Dihing, of the Sitkha; of this latter route, they could only speak by repute.

Taking the configuration of the whole country and the ranges around, in regard to the countries beyond, it seems that the only feasible in or outlet is *viâ* the Namrup basin and Nongyang or Loglai; eastwards the Patkai not only rises, but the approaches from either side become more and more difficult and traverse an uninhabited country. Westwards, again, though inhabited by Nágas, the hills are also more difficult, and the actual water-parting at a much higher elevation, the tract of mountainous country on either side becoming much wider.

The discovery of the actual route where it crossed the Patkai in olden times is not now very difficult, its locality is known, and exploration on the spot is all that is necessary.

It is not unlikely that in ascending some one of the several gaps in the lower part of the range east of the present pass, and not more than two or three miles distant, the path may be found to debouch almost at once on the level, or but little above it, rendering a route anything but difficult to open there.

Certainly, the elevation cannot be over 600 or 800 feet above the tributary of Loglai first met, that river itself probably running at about 1,000 feet below the crest. Nongyang is but 1,200 feet below a much higher portion. There are reasons for presuming that this old route was in use as the "Doi bat" in 592 A. D. by the earliest Shans from Mogong.

In illustration of this paper see Plates VIII to XIII.

II.—*On the Identification of certain Diamond Mines in India which were known to and worked by the Ancients, especially those which were visited by Tavernier. With a note on the history of the Koh-i-nur.*—*By* V. BALL, ESQ., M. A., F. G. S., *Geological Survey of India.*

(*Two woodcuts.*)

[Received 26th January:—Read 2nd February, 1881.]

Having recently published a general account of Indian diamond deposits* in which I unfortunately allowed myself, in more than one instance to be misled by untrustworthy authorities and having still more recently had an opportunity of consulting original works not available to me when I wrote, I am anxious, on this the first opportunity to correct, as far as possible, the errors to which I have given currency and to place on record some of the more important conclusions at which I have arrived.

Undoubtedly the best general account of Indian diamond deposits published up to within the past few years is that by Karl Ritter in his *Erdkunde Asien* (Vol. VI, 1836). This most careful and assiduous compiler has been quoted and misquoted, generally without acknowledgment, by a host of subsequent compilers, none of whom have supplemented his account by reference to the modern researches published by the Geological Survey of India. I am compelled to add that one of the latest writers on Indian Diamonds,† has by not having had recourse to this last source of information, misled his readers as to the positive amount of knowledge possessed at present regarding the mode of occurrence of Indian Diamonds. He has rehabilitated several long exploded theories as to their age. In his identification of the localities visited by Tavernier he has been rather wide of the mark while other parts of his paper especially his table of diamond weights are internally inconsistent with one another.

Tavernier's visits to India took place in the middle of the 17th century. He describes the mines at three localities, namely, Raolconda in the Carnatic, Gani or Coulour in the kingdom of Golconda and Soumelpour.

The identification of these three localities, has, so far as I can ascertain never been successfully made out. It is the object of this paper to describe the result of my investigations and also to draw attention to the fact that the Diamond mines mentioned in the Ain-i-Akbari as being situated at Beiragarh‡ are known to have been at a spot where traces of the mines are still to be seen.

---

* Scientific Proceedings of the Royal Dublin Society, 1880.

† Quarterly Journal of Science, N. S. Vol. VI, 1876.

‡ Vide Gladwin's Translation, Vol. II, p. 58.

It is not within the scope of this communication to describe the mines themselves, that I have done already elsewhere and hope to do so again more fully hereafter. It is from the historical point of view alone that they are discussed at present.

I. GANI-COULOUR *not identical with* GANI-PARTIÁL *Lat.* 16° 39′ *Long.* 80° 27′ *but with* KOLLUR *Lat.* 16° 42′ 30″ *Long.* 80° 5′. (Atlas Sheet No. 75.)

The mines at Gani called also Coulour by the Persians were situated, according to Tavernier, seven days' journey eastwards from Golconda.[*] In a subsequent chapter[†] to that in which the above statement is made he adds some details regarding the route. The itinerary being as follows :

Golconda to Almaspinde, ...	3½	Gos (? 2½)
Almaspinde to Kaper, ...	2	„
Kaper to Montecour, ...	2½	„
Montecour to Nagelpar, ...	2	„
Nagelpar to Eligada,........................	1½	„
Eligada to Sarvaron,........................	1	„
Sarvaron to Mellaserou, ...	1	„
Mellaserou to Ponocour, ...	1¼	„
From Ponocour you have only to cross the river to Coulour or Gani.		
Total	14¾	Gos.

The total of these items amounts to 14¾ *gos* and in the English edition of the Travels[‡] amounts to 15¾. But it must be concluded that both tables contain misprints since Tavernier expressly says that the distance was 13¾ *gos* or 55 French leagues the *gos* being equal to 4 leagues. Taking this league to be equal to 4,444½ metres its value expressed in English miles would be 2·78 and therefore the *gos* (2·78 × 4) would be equal to 11·12 English miles,[§] or rather less than the modern Indian stage distance of 6 coss or about 12 miles. The distance of Coulour from Golconda was therefore, by the route taken by Tavernier, 153 miles (11·12 × 13·75.) It is impossible to identify all the names of stages mentioned in the above list, some of them as Almaspinde and Montecour have a very un-Indian sound about them; but Eligada seems to be Oorlagondah of Atlas sheet 75 (Lat. 17° 15′ Long. 79° 55′) and Sarvaron and Mellaserou may very possibly be represented by the modern Singawarum and Maillacheroo, they being separated from one another and from the crossing of the Kistna river to certain diamond mines, by distances which correspond, nearly, to those given by Tavernier.

---

[*] Voyages, Liv. II, Chap. XVI, p. 304, Paris, 1677.

[†] *Idem.*, Chap. XVIII, p. 316.

[‡] Lond. fol 1684, p. 142.

[§] Heyne (Tracts, p. 94) mentions the *Gow* as a term in use in his time (1795). It was, he says, equal to eight miles.

If the diamond mines of Coulour were situated south of the Kistna and that was the river crossed and not its tributary the Moonyair then they were wholly distinct from those of Partiál. In favour of this there is much to be said. On the south bank of the Kistna west of Chintapilly in Lat. 16° 42′ 30″ and Long. 80° 5′ there is a diamond locality which on the oldest engraved map I have seen, that by Thomas Jefferys, (London, 1768) is called Kalur or Gani. This it may be thought would finally settle the question, but as I shall have to say when speaking of Raolconda both this authority and Rennell evidently took their information, from Tavernier, and not from independent sources.

Fortunately a manuscript map by Col. Colin Mackenzie, of the Nizam's dominions, which is dated 1798, indicates this locality as Coulour and marks it as a diamond mine. Partiál is written *separately* in its proper place as Gani-Purtial and so also is a well known intermediate locality at Istapully and both are marked as having diamond mines. I think on the whole we are bound to conclude therefore that Tavernier's Gani Coulour was not identical with Gani Purtial the modern Partiál but with the modern Kollur as it is written on the Atlas Sheet No. 75. So far as can be seen from the map its surroundings are not inconsistent with Tavernier's description, he says the mine is close to a large town on the same river (Kistna?) which he crossed on the road to Raolconda, and that a league and a half from the town there are high mountains which are in the form of a cross. In the intervening plain the search for diamonds was carried on. The locality too, it may be added, is in the middle of presumedly diamond bearing rocks.

Now as regards this word Gani there is still a remark to be made. Its recurrence in the titles of two mines which I have shewn were distinct, suggests that it was not a proper name, and that in fact it really meant 'mine of' being only a corruption of *Kan i.*[*] We know that the letters G and K are interchangeable in some Indian languages and therefore no particular effort is required to accept the view that Gani Coulour meant simply the mine of Coulour, *i. e.*, the modern Kollur. So that to speak of, the mine of Gani, as is often done, is meaningless tautology.

---

[*] I am indebted to Mr. Baden Powell, C. S. for this interpretation, vide 'Punjab Manufactures', p. 197.

Identity of the Great Mogul Diamond with the Koh-i-nur.

As the identity of the Great Mogul or Kollur diamond has been the subject of much controversy I think it well to include the following note here since it properly comes under the head of Gani-Coulour or Kollur. Tavernier states that not only it, but many other large stones were produced there, and he adds, that, in his time the miners still continued to find large stones in the same mines.

I shall first quote *verbatim* and then analyze what Tavernier has written regarding this diamond. Having gone to take leave of the Great Mogul (Aurangzeb) on the 1st of November 1665, he was invited to return on the following morning to see the Emperor's jewels. He says,* "The first object which Akel Kan (the Custodian of the Jewels) put in my hands was the great diamond, which is a rose, round, very convex (? haute) on one side; at the edge of one side there is a small notch (cran) with a flaw in it. The water is perfection and it weighs 319½ *ratis* which are equal to 280 of our carats the rati being ⅞ of a carat. When Mirgimola who betrayed the king of Golconda, his master, made a gift of this stone to Sháh Jehán from whom it is descended it was uncut and weighed 900 *ratis* which are equal to 787½ carats and it had many flaws. If this stone had been in Europe it would have been differently treated, for some good pieces would have been taken from it and the stone left much larger, as it is it has been almost polished away. It was *Sieur* Hortensio Borgio, a Venetian who cut it, for which he was badly paid. They reproached him with having spoilt the stone which ought to have remained heavier and instead of paying him, the Emperor made him pay a fine of 10,000† (rupees) and would have taken still more if he had possessed it. If Hortensio had known his work better he might have taken some good pieces off without doing injury to the king and without having expended so much trouble in polishing it, but he was not a very accomplished diamond-cutter."

It is now believed by some authorities that very large pieces, including the Orloff diamond were as a matter of fact cleaved off from the original Great Mogul. Certainly cleavage had as much to do with the shape of the Koh-i-Nur as polishing.

In the chapter on his visit to the mines at Coulour,‡ he says that the Great Mogul diamond was found there. If this be true and also that the mine was only discovered about 100 years before his visit, which took place between the years 1665 and 1669, then this diamond cannot have the great antiquity claimed for it by some of those who consider it to be identical with the Koh-i-nur.

---

* Voyages, Vol. II, Livre, 2, p. 249. Paris Ed. 1677.

† Even this item is variously stated by compilers who seem to have been the cause of much of the confusion that exists about the weights &c., of this historical gem.

‡ l. c., p. 305.

Tavernier's third mention of this diamond which is accompanied by a figure is as follows: "This diamond belongs to the Great Mogul who did me the honour to show it to me with all his other jewels one sees the form which it received on being cut. On my being permitted to weigh it I have found its weight to be $319\frac{1}{2}$ *ratis* which are $279\frac{9}{16}$ of our carats. In its rough state*it weighed as I have said 907 *ratis* which are $793\frac{5}{16}$ carats. The stone has the same form as if one cut an egg in two."

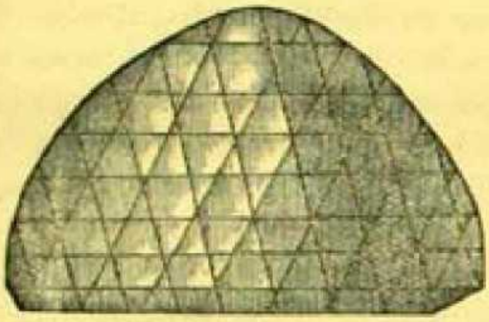
He gives us therefore two different accounts of its weight in the rough, 900 ratis or $787\frac{1}{2}$ carats and 907 ratis or $793\frac{5}{16}$ carats. It is obvious that there is a mistake as the two do not agree in any respect even the equivalent values calculated at 1 *rati* = $\frac{7}{8}$ of a carat should be $787\frac{1}{2}$ and $793\frac{5}{8}$. I have already pointed out strange and unaccountable defects in Tavernier's arithmetic.

Different weights and measures appear to have been used in different parts of the country in his time, the mangelin = $1\frac{3}{4}$ carats or 7 grains at Raolconda and Coulour; the *rati* = $\frac{7}{8}$ of a carat or $3\frac{1}{2}$ grains at Soumelpour. If we could with approximate accuracy fix the value of the *rati* mentioned by Tavernier we might succeed perhaps in instituting a fair comparison between the Great Mogul and other diamonds. It seems to be difficult to believe that it equalled $3\frac{1}{2}$ grains as he states. In Nagpur in the year 1827 according to Mr. Jenkins the *rati* was only 2·014 grains. The French grain was equal to about ·77 of a troy grain, therefore since the *rati* contained $3\frac{1}{2}$ of these, its value would have been 2·695 or say 2·7 troy. This fact seems to have been overlooked by some who have endeavoured to reduce the weights given by Tavernier: non-experts too, appear to have forgotten that the diamond grain is not identical with any other grain, though our English carat contains 4 of these grains it only consists of 3·174 troy grains.* So calculated, the weight of the Great Mogul would be $\frac{319{\cdot}5 \times 2{\cdot}7}{3{\cdot}174} = 271{\cdot}78$ English carats. If in this equation we could see our way to putting the value of Tavernier's *rati* at 1·84 instead of 2·7 then the exact weight of the Koh-i-nur when brought to England would be obtained but for this there is perhaps no necessity. Another system of calculation is used by the writer of a note in the Great Exhibition Catalogue of 1851, in which he adopts the known maximum weight of a *rati* at $2\frac{3}{16}$ grains (? what grains) and thence deduces 175 carats as the weight of the Great Mogul. This is somewhat short of the $186\frac{1}{16}$ carats of the Koh-i-nur while the other is too large. Supposing the Koh-i-nur to be identical with the Great

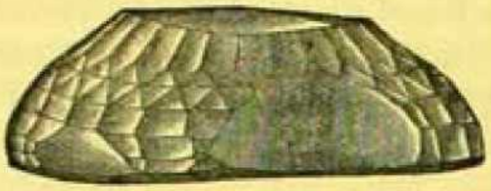
---

* *Vide* Encyclopædia Britannica, Art. Diamond.

Mogul it may have been mutilated during its travels and this may account for the loss in weight 271·78—186·06 = 85·72 carats, and for the difference in its shape when brought to England from the sketch given by Tavernier.



THE GREAT MOGUL
(From sketch by Tavernier).



THE KOH-I-NUR
(Before recutting).

It is probable moreover that Tavernier's sketch or diagram as it might be called, which is here reproduced for comparison, was from memory and was therefore more regular in outline than the original. The name Great Mogul was, of course, not of native origin but was probably first conferred by Tavernier. By the natives, it was in all probability originally known as the Kollur diamond. In reference to this I was quite accidentally informed, by a native jeweller of Calcutta that it has been suggested, if not absolutely stated by some native writer that the title Koh-i-nur really owes its origin to a change in the originally meaningless name Kollur. Such changes, in which, while the sound is more or less retained, a meaning is acquired are not by any means rare in Oriental languages while they sometimes occur in those of Europe. Thus English surnames in the mouths of natives become changed into words of similar sound which have a meaning in Hindustani or whatever the language spoken may be.

From the above I think it will be admitted that there are good reasons for believing in the identity of the Great Mogul or Kollur diamond of Tavernier with the Koh-i-nur. In spite of the slight differences in weight in his two statements we cannot suppose that he saw two distinct diamonds, and the hypothesis that the Great Mogul diamond still exists in Persia under a different name is wholly without foundation.

II. RAOLCONDA, *identical with Rawduconda, Lat.* 15° 41′ *Long.* 76° 50′.— *District of Mudgul in Haidrabad.*

It has hitherto been supposed by all the authors to whose writings I have had access that Tavernier's Raolconda can no longer be traced and certainly the investigation presents some difficulties, but I venture to believe that the following affords the right clue to its identification.

According to Tavernier* Raolconda was situated in the Province '*Carnatica*'† five days' journey from Golconda and eight or nine from Visapour (Bijapur). Remembering that he states that he crossed the river separating the kingdoms of Golconda and Visapour, *i. e.*, the Kistna or its tributary the Bhima and fixing the rate of travelling at 20 miles a day which seems to have been Tavernier's average, we should arrive at the conclusion that Raolconda was situated somewhere in the angle between the Kistna and Toongabudra rivers and not far from their junction; but as in the case of Gani-Coulour, Tavernier gives a route list of the stages between Golconda and Raolconda which, on analysis, proves to be quite inconsistent with the above stated distance between them. This list is as follows:—

1.	Golconda to Canapour, ...	1	*Gos.*	
2.	Canapour to Parquel, ...	2½	"	
3.	Parquel to Cakenol, ...	1	"	
4.	Cakenol to Canol-Candanor,....................	3	"	
5.	Canol-Candanor to Setapour,...	1	"	
6.	Setapour to the river,.......	1	"	
	(This river is the frontier of the kingdoms of Golconda and Visapour, *i. e.*, the Kistna).			
7.	The river to Alpour, ...	¾	"	(?)
8.	Alpour to Canol, ...	¾	"	(?)
9.	Canol to Raolconda, ...	2½	"	
	The total of these items would be	14½		

Here again there is something wrong in the arithmetic since Tavernier gives the total as being 17 *gos.* probably the items 7 and 8 are misprints for 3 each. To begin with there are here given 9 stages and the distance 17 Gos. or 68 French leagues must have been, according to the method of calculation adopted above in the case of Gani-Coulour,‡ about 189 miles. If Gani-Coulour 150 miles distant from Golconda was a seven days' journey it follows that Raolconda must have been much nearer nine than five. and therefore it seems probable that Tavernier really meant to write exactly the converse of what he did write, and that we should transpose the distances given respectively of Raolconda from Golconda and from Visapour.

This being done and these new indices of position being applied to the map, we are led unhesitatingly to identify Tavernier's Raolconda with the modern Rawduconda in Lat. 15° 41′ and Long. 76° 50′. That Raolconda was not *on* the Kistna or its tributary the Bhima as some writers have supposed is evident from the fact that Tavernier states that on his return journey from Raolconda the governor gave him an escort of six horsemen in order that he might traverse in safety the tract under his government up to the river separating the two kingdoms and which was, as shewn above, at the 6th of 9 stages on his outward journey.

---

* Voyages des Indes, Paris, 1867, Ser. II, Chap. XV, p. 293.

† This term or rather Karnata was an ancient Hindu geographical division which comprehended the tableland of South India *above* the Ghats. See Hamilton's Hindustán, Vol. II, p. 247. Also Ferishta's History by J. Scott, Vol. I, p. 45.

‡ *i. e.*, one league = 2·78 English miles.

Rawduconda, as the crow flies, is situated 165 miles south-west from Golconda and by road it must be quite 189 miles. From Bijapour (or Visapour) it is about 110 miles or some five days' journey to the south-east. The town is 6 miles distant from the western bank of the Toongabudra river one of the principal feeders of the Kistna. From the station of Raichúr on the Madras Railway Rawduconda is about 50 miles distant in a south-westerly direction.

I believe it will be admitted by all who care to investigate the question that the above is a legitimate conclusion. Tavernier's two statements as they stand are clearly contradictory, but the first being amended as I have suggested their united testimony seems to compel the conviction that we have at length identified his Raolconda.

Tavernier describes the neighbourhood of Raolconda as being sandy and full of rocks and thickets somewhat similar to the environs of Fontainebleau.* I have not seen any recent account of the locality and the geology can only be guessed at. All round at no great distance crystalline rocks are known to occur, but Tavernier's account of the matrix seems to indicate a rock other than any belonging to the crystalline series. However, it is no part of my present object to enter further into this question nor is it necessary to reproduce Tavernier's account here.

Captain Burton† who appears to have located Raolconda on the Bhima as he certainly did Gani (*i. e.*, Coulour) relates that he heard of diamonds in Raichúr and that Sir Salar Jung offered to arrange for his going there, but that he gave up the idea on hearing that there were only crystalline rocks there. It is possible that a tradition of diamonds at Rawduconda in the Mudgul Circar adjoining Raichúr may still linger at Haidrabad.

I let the above stand without alteration though since it was written I have had an opportunity of examining a number of old maps at the Surveyor General's Office, for which my thanks are due to Mr. James.

---

* This description is very similar to that given by Newbold of the opposite or eastern bank of the river where granite rocks rise from a wide expanse of furrowed sand. *Vide* Madras Journal of Literature and Science, Vol. XI, p. 126. Unfortunately Newbold never mentions Rawduconda though he passed within a few miles of it while on two of his traverses.

† *Vide* Quarterly Journal of Science, Vol. VI, 1876.

Thomas Jefferys' engraved map of India, dated 1768 gives Tavernier's stages to Raolconda which is placed in the angle between the Bhima and Kistna with such accuracy that it is impossible not to conclude that the route was laid down to fit Tavernier's supposed line and not from independent evidence, there is too, other internal evidence that Jefferys took some of his localities from Tavernier.

Rennell's map of 1788 is open to precisely the same criticism. But a manuscript map of the Nizam's dominions by Col. Colin Mackenzie, dated 1798 largely drawn from actual surveys, does not represent any similar route terminating at Raolconda, but it does give Rawduconda in its right place. A village called Alpour situated south of Raichúr on this map may be identical with the locality, two marches from Raolconda, which is mentioned by Tavernier. Similarly Boorcull another village near Golconda may be Tavernier's Parquel. Heyne it is true in a map published with his tracts calls Karnul, Canoul and Canúl in the text, these are almost the same words as Tavernier's Canol.

In conclusion if Raolconda be not identical with Rawduconda I can only suggest that it may be Ramulkota a known diamond mine in Lat. 15° 34′ Long. 78° 3′ 15″ but being 120 miles as the crow flies from Haidrabad and 150 miles from Bijapur, two rivers, the Kistna and Tungabudra having to be crossed to reach it, *en route* from the former, it does not fit so well with Tavernier's description. Ramulkota is only about 19 miles south of Karnul whereas Rawduconda must have been 30 miles from Tavernier's Canol.

III.—SOUMELPOUR *of Tavernier situated in Chutia Nagpur and not identical with Sambalpur as has been supposed by some authors. Possibly represented by the modern Simah in Palamow, Lat* 23° 35′ *N. Long.* 84° 21′ *E.*

When writing of Ptolomey's *Adamus flus* in the paper already quoted I pointed out that though doubtless it was intended for the Mahanadi its upper reaches are represented as passing through a region called Cocconage which is supposed to be identical with Chutia Nagpur. Though this is not exactly the case still one of the principal tributaries of the Mahanadi, namely, the Ebe, which is itself believed to be diamond bearing, passes through a large portion of Chutia Nagpur.

Although I included Tavernier's description of Soumelpour under the heading of Sambalpur I recognised that the facts did not seem to fit which I attributed to defective geographical knowledge on his part. There can be no question, however, that the Soumelpour which was visited by him was situated far to the north, being if not identical with, at least not very far removed from, the localities in Kokrah or Chutia Nagpur which were discussed in a paper by the late Mr. Blochmann* who states that the Generals of Akbar and Jahángiri were led to invade Kokrah and attack the Rája on account of the diamonds which it was believed they would find there. Mr. Blochmann believed the river to have been the Sunk and I mention in my paper that a spot is still shown in that river where diamonds are said to have been found.

Tavernier's list of stages from Agra to this mine as in the other cases presents some perplexing items. It is as follows with the real distances in miles added for comparison.

	Costes.	*Actual distance in miles.*
Agra to Hulabas (Allahabad), ...	130	276
Hulabas to Benarous (Benares), ...	33	95
Benarous to Saseron (Sasseram), ...	4	70
Saseron to Great Town, ...	21	
Great Town to Rodas (Rhotas), ...	4	24
Total	192	465
Rodas to Soumelpour, ...	30	

There are several manifest inaccuracies in the above. The distance between Allahabad and Benares is in reality about one-third of that between Agra and Allahabad yet Tavernier makes it only one-fourth. The 'Great Town' mentioned, probably lay between Benares and Sasseram not between Sasseram and Rhotas. The items 4 and 21 should be transposed.

If Sasseram were 8 *costes* from Rhotas then since the distance is 24 miles, the *cost* would equal 3 miles and the same result would be obtained, nearly, from the distance between Allahabad and Benares, but by dividing the above totals of the table, *i. e.*, 465 by 192 we only get 2·4 as the value of the *cost*. If again we strike the average between these, 2·4 and 3, we get 2·7 as a final approximate value. Now multiplying the 30 costes which are stated to intervene between Rhotas and Soumelpour by this we obtain 81 miles as the distance between these places. The next question to determine is what locality at this distance from Rhotas answers to the following description of Soumelpour, "The Rája lives half a league from the town in tents set upon a rising ground at the foot whereof runs the *Gouel* descending from the southern mountains and falling into the Ganges." Just 80 miles from Rhotas at the foot of the Neturhat plateau there are the remains of an ancient town called Simah Lat. 23° 35′ Long. 84° 21′ rather more than a mile from the left bank of the Koel where it enters the Palamow subdivision from the highlands of Lohardagga.

---

* J. A. S. B. Vol. XL. pt. 1, p. 11.

Simah I take to be the same as *Semul* the name of the silk cotton tree (*Bombax malabaricum*) which attains an enormous size in that particular region, and Simah or Semul-púr might have very probably been written Soumelpour by Tavernier. That the name of the river, Gouel, is identical with Koel, under the circumstances, admits of no doubt whatever as the Koel runs northwards to join the Sone and so reaches the Ganges; but it is perhaps open to question whether the present Koel or its tributary, the Aurunga, may have been intended.

Tavernier states that the diamond searchers worked up to the sources of the river in the hills 50 *costes* distant to the south. This though an exaggeration as applied to the length of the Koel would be wholly inapplicable to the Aurunga, but on the maps by Rennel of a century ago the name Koel was applied to the Aurunga while the present Koel, above the junction, bore the name Burwah or that of the region where it takes its rise. The highlands separating Palamow from Lohardugga proper form part of a water-shed between the rivers of the Ganges basin which flow northwards, and those of the Brahmini and Mahanadi basins which flow to the south. Among the former the Koel and the Aurunga are the principal and among the latter the Sunk and another Koel both of which, flowing southwards, combine to form the Brahmini.

If there were really two sets of diamond mines, one in each basin, it is probable that the sources of the diamonds were identical being situated in these ranges of hills which form the water-shed, unfortunately we do not know much of the geology although neighbouring areas have been pretty closely worked, but it will be interesting to see whether future research will prove the existence of an outlier of Vindhyan rocks—representatives of the formation being rarely absent from the vicinity of diamond mines in India. On Jeffery's map to which allusion has been made on a previous page. Soumelpur is placed on a river (doubtless the Koel) south of Rhotas and 15' north of a town called Jounpur. As no other towns save Soumelpur are given in the same region, it is clear that Jefferys took his data from Tavernier. Rennell, however, in his map of this region marks diamond mines south of the water-shed, *i. e.*, on the Sunk river.

There is still another point of interest to be mentioned with reference to the identification of these mines. A large picture, representing the attack upon the fort of Palamow in 1660 by Daud Khán, which has been described by the late Col. Dalton* contains a figure of the *Zamindar i Kán i almas*, or lord of the diamond mines, in the back ground. He is considered by Col. Dalton to be a Kol (Nagbunsi) Rája but why should he not be regarded as being precisely what he is described. He was probably the very person whom Tavernier found living in tents on a rising ground only five years later.

---

* J. A. S. B. Vol. XLIII. pt. I, 240.

I have reason to believe* that the late Mr. Blochmann was somewhat perplexed by the statement in the *Tuzuk-i-Jahángiri* that the presence of diamonds was indicated at particular spots by the hovering (?) over them of insects called *Jhinga.* Might not this term *Jhinga* have been a technical one meaning the same small pebbles which Tavernier calls 'thunder stones' and by the occurrence or absence of which the skilful miners, he says, knew whether the sand contained diamonds or not. They are believed to have been small spherical masses of iron ore.

IV.—BEIRAGARH—*mentioned in the Ain i Akbari identical with Wairagurh in the Chanda District C. P.* Lat. 20° 26′. Long. 80° 10′.

In the Ain i Akbari† which was written towards the close of the 16th century it is stated that there is a diamond mine at Beiragurh which had been conquered lately by Bubjeo otherwise called Chanda who was the zemindar of an ancient city in Subah Berar called Kullem.

An earlier notice of the locality occurs in Ferishta's History‡ from which we learn that the diamond mines at Kullem in Gondwara, where stood many temples, were taken possession of in the year 1425 by Ahmed Sháh Wali Bhamuni.

Again in the '*Brhat Sanhita,*' in the chapter on Trying of Diamonds, the peculiarities of stones from the following localities are described. Vena river, Koçala, Surashtra, Supara, Himalya, Matanga, Kalinga Pundra. The second of these is I find from Genl. Cunningham's Ancient Geography probably Berar with Chanda for its capital town. Possibly, however, it here indicates quite a different place, namely, the modern Chicacole on the East Coast which might very possibly have been a mart for the sale of diamonds; but the Vena river is believed to have been the Weingunga.

It is needless to enumerate the various suggestions as to the identity of Beiragurh by Rennell, Karl Ritter and others. It has now been clearly established that the ancient Kullem was identical with the modern Chanda and that Beiragurh is to-day represented on the maps by Wairagurh on the Sath river a tributary of the Kophraguree which is itself a tributary of the Weingunga.

The exact position of the town is Lat. 20° 26′ and Long. 80° 10′. On the opposite bank of the river the map shews a town called Hirapur. The existence of ancient excavations long since deserted and which are locally asserted to have been made for diamonds is attested to by Messrs.

---

* Vide J. A. S. B. XL, pt. I p. 114, note.

† Gladwin's Translation, London, 1800, Vol. II, p. 58.

‡ Ed. J. Briggs, London, 1819, Vol. II, p. 406.

Jenkins and Wilkinson, residents at Nagpur,[*] by Messrs. Hislop and Hunter[†] and more recently by Mr. Beglar of the Archæological Survey. The fact is also recorded in the Central Provinces Gazetteer under the heading of Wairagurh where, however, there is no mention of the identity of Beiragurh with Wairagurh although it is fully set forth in the historical account of Chanda in the same volume; but this I did not see until I had independently come to the same conclusion.

As not improbably referring to this last locality it may be of interest to add the following from the account[‡] of the Travels of Nicolo Conti in the early part of the 15th century. I cannot agree with the writer of the Introduction to the volume which contains this account that Golconda was intended. Nicolo Conti says that at 15 days' journey north of Bizengulia (by which Vijayanagar the modern Bijapur is intended) there is a mountain which produces diamonds called Albenigaras. Now Beiragarh, the modern Wairagarh, is as the crow flies about 324 miles north-eastwards of Bijapur and therefore within a possible 15 days' journey though, as the actual distance traversed would be greater it would require very hard travelling. However *Al*benigaras looks so like Beiragarh with the Arabic prefix *El'* or *Al'* that I am inclined to believe that it was the place intended. He goes on to say that the mountain being infested with serpents it is inaccessible, but is commanded by another mountain somewhat higher. "Here at a certain "period of the year men bring oxen which they drive to the top, and "having cut them into pieces, cast the warm and bleeding fragments upon "the summit of the other mountain by means of machines which they "construct for the purpose. The diamonds stick to these pieces of flesh. "Then come vultures and eagles flying to the spot, which seizing the meat "for their food, fly away with it to places where they may be safe from the "serpents. To these places the men afterwards come, and collect the "diamonds which have fallen from the flesh." Nicolo Conti continues with an account of how other less precious stones are obtained, and his description is that of ordinary Indian diamond mining. The travels of Sindbad the Sailor and of Marco Polo whose account apparently refers to localities in Golconda on the Kistna, have made this tradition of throwing pieces of meat in order that the diamonds may stick to them familiar to most people; yet an adequate explanation of the origin of the myth does not appear to have been offered hitherto. I believe the following to be a probable one.

Heyne in the account of his visit to the mines at Kadapah (Cuddapah) states that they were under the particular protection of Ammawáru (the sanguinary goddess of riches, *i. e.*, Lakshmi) and the miners objected to his riding on horseback up to the mines for fear of offending her. Now what can be more probable than that the miners, before opening a new mine, in order to invoke the aid of this sanguinary goddess made an offering to her of cattle or buffaloes. Bloody sacrifices are known to be offered to Lakshmi in one of her forms.

---

[*] Vide Calcutta Journal of Natural History, Vol. III, p. 290.

[†] Journal of the Geological Society, Vol. XI, p. 355.

[‡] India in the 15th century. Hakluyt Society, p. 29.

The opening up of new mines was and is we are told by several authorities preceded by various rites and ceremonies. The miners were probably never Hindus, and the custom of offering up cattle in sacrifice by the aboriginal tribes from the Todas to the Sontals is too well known to require special illustration. If it be admitted that the opening of a mine was preceded by the sacrifice of cattle and the throwing the fragments of the flesh to be devoured by the fowls of the air, we at once arrive at the foundation of fact upon which this superstructure of fable has in all probability been erected.

Casual spectators and travellers may very easily have supposed that the slaughter of cattle and the subsequent throwing about pieces of meat was an essential part of the operations. Any one with experience of how Oriental imagination can erect a tale of fiction on a small substratum of fact will find no difficulty in conceding that in the above supposition there is a sufficient explanation for the origin of the whole story.

It may be added that this propitiation of malefiant spirits was and is by no means limited to mining operations connected with diamonds. In the Journal of this Society* will be found an account of one of the richest gold bearing tracts in Assam which had been deserted by the indigenous gold washers in consequence of the expense connected with the propitiation of the evil spirits who guarded the mineral treasures, being greater than they could afford to pay.

III.—*List of* Mollusca *from the Hills between Mari and Tandiani.*—

By W. Theobald, *Deputy. Supt. Geological Survey.*

[Received Nov. 25th ;—Read Dec. 1st, 1880.]

The following list, which embraces three new species, was drawn up during a five months' residence at Tandiani, the hill station of Hazara. It will give a good idea of the molluscan fauna of the region, but is most unquestionably not exhaustive, and I trust to some of my younger colleagues taking up the work, which I regard as here only begun.

---

* Vol. XXII, p. 511.

The work of the naturalist should resemble in its method, no less than in the devotion bestowed on it, that of Bees :—

> "Ergo ipsas quamvis augusti terminus aevi
> Excipiat, neque enim plus septima ducitur æstas
> At genus immortale manet, multos que per annos
> Stat fortuna domus, et avi numerantur avorum."

Fam. ZONITIDÆ.

HELICARION FLEMINGI, Pfr.

This species is extremely abundant at Tandiani though not of quite so large a size as specimens obtained by Stoliczka at Mari. My largest shell measures diam. max. 36, min. 27 alt. 16, whereas a Mari shell measured 40 mills.

To judge by Mr. Nevill's measurements (40 × 23 × 12) his measurements are taken somewhat differently to mine. My 'diam. maj.' or length, 'min.' or breadth and 'alt.' (or *axis* of Mr. Nevill) are all measured at right angles to each other and with a *straight limbed* measure, like a shoemaker's, not curved callipers, whence my 'alt.' or axis' is larger than Mr. Nevill's, though the shell is a trifle smaller.

H. AUSTENIANUS Nev. (Mollusca of the Yarkand mission).

This species is scarce at Tandiani. The animal is furnished with a large mucous pore behind, and carries a long linguiform process of the mantle, capable of extension to the apex, and is one of those species which though so provided does not possess a polished shell. The texture of the shell (epidermis) is during life delicately sericeous, from the fine striation of the epidermis. Mr. Nevill correctly describes it, as 'glossy,' that is like silk.

My largest specimen measure diam. maj. 16· min. 13·1, alt. 8 mills.
The animal is rather more depressed than *H. Flemingi.*

H. STOLICZKANUS, Nev. (Yarkand mollusca).

This species abounds on the north-east flanks of Sirban hill opposite Damtour in a grove, frequented by picnic parties from Abbottabad. My largest specimen measures :

Diam. maj. 27·5, min. 21, alt. 14·5 mills.

The colour of the body whorl is greenish, of the earlier whorls rusty. The shell is transversely rugous above, crossed by fine, above almost microscopic lines, giving it above a sericeous lustre ; beneath the shell is smooth or sub-polite.

MACROCHLAMYS PRONA, Nev.

(Mollusca of the Yarkand mission).

This species occurs not unfrequently at Tandiani, though it does not quite correspond with the Naini Tal type. The spire of my specimens is convex not 'flat,' and my largest shell is rather larger than Mr. Nevill's type, but the shells are I doubt not identical.

An unusually large specimen of 6 whorls measures, diam. max. 15, min. 13·4, alt. 7·8 mills. Adults are rare, as I have only two. The animal is long and slender, and dark slaty above, with long tentacles. A stout dwarf form measures diam. max. 11·8, min. 10·3, alt. 5·9 mills.

BENSONIA MONTICOLA, Hutton.

This species is not rare at Tandiani and the shells are usually of a dark rich chesnut colour, though pale individuals also occur. The abundance of dead shells in the surface soil in sheltered spots among rocks, suggests here, as in Kashmir that the species was formerly more abundant than now.

I adopt M.. Nevill's generic name as a convenient one for this species, but I am disinclined to refer to it (as Mr. Nevill does in his Yarkand memoir) *Macrochlamys splendens*, Hutton, with its lustrous, highly polished shell which would seem to fall more naturally into the '*vitrinoides*' section of the genus, (*Nanina*).

MICROCYSTIS NEVILLIANUS, Theob.

This pretty little species is not rare at Tandiani. I do not describe it here as I have furnished specimens to Col. Godwin-Austen for his forthcoming work on the genus; it is a very snug little form of 6 whorls, of a pale brown colour, warmed with orange towards the mouth.

My largest specimen measures diam. max. 8, min. 7·4, alt. 4·6 mills.

TROCHOMORPHA TANDIANENSIS, n. sp.

Testâ trochiformi, carinatâ, anguste umbilicatâ, tenui corneâ; Anfractibus sex, lente crescentibus, transverse rugose striatis. Aperturâ parum obliquâ, lunate-quadratâ. Margine simplici, columellari juxta brevissime reflexo.

Lat. maj. 9·6, *alt.* 6·7 *mills.*

Habitat ad Tandiani (in sylvis) montibus Hazaræ, ad pedes 8500 alt.

The animal has a distinct overhanging mucous pore. The nearest ally of this shell is perhaps *T. hyba*, B. which is found from Chamba to Kashmir, but like the present is a somewhat rare shell and of limited distribution.

KALIELLA FASTIGIATA, Hutton.

Three individuals of this widely distributed, but not common shell were taken by me at Tandiani.

Fam. HELICIDÆ.

VALLONIA HUMILIS, Hutton.

Not very rare, on trees at Tandiani.

Fam. LIMACIDÆ.

ANADENUS ALTIVAGUS, Theob.

This large slug is not uncommon at Tandiani, though only seen abroad after heavy rain.

Mr. Nevill doubts if I am correct in writing with this, the *A. giganteus*, Haynemann, which Mr. Nevill thinks is a larger and distinct species, of which he has seen specimens from Nipal.

NAPÆUS DOMINA, B.

A dextral form of this shell is very common on the hills between Tandiani and Abbottabad, from 4000 to 6000 feet. It is identical with the form found at Mari and typical (sinistral) forms also occur.

Long. 26, Lat. 9·6 mills.

A small variety is found in places and in the Pakli valley north of Abbottabad. It is dextral and varies rather in form. Two specimens of this var. minor measured.

a. Long. 20, Lat. 9 mills.

b. Long. 19, Lat. 7 mills.

Specimen *b* is intermediate between 'domina' and 'spelæus.'

N. BEDDOMEANUS, Nev.

(Mollusca Yarkand mission).

This is rather a common species at Tandiani. There are three varieties of it var. *typica* 10 whorls, Long 12, Lat. 2·6 mills.

Var. *turrita* 11 whorls, Long. 12·4, Lat. 3 mills.

Var. *pusilla* 9 whorls, Long. 8·5, Lat. 2·5 mills.

This is the most aberrant species of its genus, and is certainly not very near any of its allies. The flat expanded peristome it sometimes displays, suggests a relationship to some pupas, *P. cænopicta*, Hutton, for example. It is not a little strange too that I have hitherto failed to detect a single *Pupa* at Tandiani though the prevailing rock being limestone, would seem favourable to their presence.

N. MAINWARINGIANUS, Nev.

(Shells of Yarkand mission).

A variety, as I take it of this shell is locally not rare on the hills north-west of the Pakli valley from 4000 to 5000 feet. It has one whorl less than the type (which is described as having 7) but is slightly larger, a difference probably due to the lesser elevation at which my specimens lived. Shell with six whorls, outer edge of aperture not quite so convex, or full, as in Nevill's plate. In most other respects corresponding with the description of the type. The surface under a lens displays a microscopically decussated sculpture, not mentioned in the type. Two varieties occur.

Var. *major* Long. 15, Lat. 6·2 mills.

Var. *intermedia* Long. 12, Lat. 4·4. This last I do not term 'minor', as it is actually larger than the type from Mari.

N. SMITHEI, B.

This species was found by me at Mari, rarely.

PERONÆUS NEVILLIANUS, n. sp.

Testâ turritâ, rimatâ, costaneâ, Anfract. 8 *ad* 9 *convexiusculis, transverse plicatis, lineisque spiralibus leviter decussatis, ultimo brevissime ascendente. Aperturâ oblongâ, verticali. Margine pallido, simplici, expansiusculo, et juxta columellam breviter reflexo.*

Long. 15·7, Lat. 4·1 mills ad Long. 11·9, Lat. 4 mills.

Habitat ad Tandiani, montibus Hazaræ ad 8500 ped, circa radices arborum.

I have named this elegant species after Mr. G. Nevill whose work on the Yarkand mollusca and other Indian *Pulmonata* has so helped to elucidate the synonymy and relations of many species of that order.

CLAUSILIA WAAGENI, Stol.

This species is tolerably abundant at Tandiani on trees. My specimens vary from 11 whorls (Long. 17, Lat. 4 mill.) to 12 whorls (Long. 21, Lat. 4·75 mills.)

C. CYLINDRICA, Gray.

This species is very abundant in rotten wood.

An undecollated specimen of 11 whorls measured 15·4 mills, a decollated specimen of 5 whorls only 11·8 mills.

Appended is a list of the mollusca known to me from the Mari and Tandiani hills.

T. Tandiani. M. Mari. H. Hazara.

(An asterisk denotes the species is recorded on Mr. Nevill's authority.)

Helicarion Flemingi, Pf. T. M. H.
H. Austenianus, Nev. T.
H. Stoliczkanus, Nev. H.
H. monticola Pfr. H.
Macrochlamys, prona Nev. T.

M. chloroplax, B. M.*
M. Jacquemonti v. Mart. M.*
Bensonia monticola, Hutton T. M. H.
Microcystis Nevillianus, Theob. T.
Trochomorpha Tandianensis, Theob. T.
Kaliella fastigiata, Hutton T. M.
Vallonia humilis, Hutton T. M.
Anadenus altivagus, Theob. T. M.
Napæus domina, B. M. H.
N. Beddomeanus, Nev. T. M.
N. Mainwaringianus, Nev. T. M.*
N. Smithei, B. M.
Peronæus Nevillianus, Theob. T.
Clausilia Waageni, Stol. T. M.
C. cylindrica, Gray T. M.

IV.—*A list of* BUTTERFLIES *taken in Sikkim in October*, 1880, *with notes on habits, &c.*—*By* LIONEL DE NICE'VILLE.

[Received December 12th, 1880; Read 6th April, 1881.]

PART I.

Insects taken on the road between Siligori, elevation 397 feet above the sea, and Chunabatti, 2,260 feet.

1. *Danais melaneus*, Cramer.
Common in the Terai and the wooded slopes below Chunabatti.

2. *Danais aglea*, Cramer.
Lower hills.

3. *Danais septentrionis*, Butler.
One male on lower hills.

4. *Danais chrysippus*, Linnæus.
Common in the open between Siligori and the Terai forest-belt.

5. *Danais plexippus*, Linnæus.
Common in the Terai.

6. *Euplæa* (*Trepsichrois*) *midamus*, Linnæus.
Males only observed in the Terai.

7. *Euplæa core*, Cramer.
Both sexes very common in the Terai.

8. *Lethe rohria*, Fabricius.
Very common on the road through the Terai.

9. *Lethe europa*, Fabricius.
Only one male seen in the Terai.

10. *Mycalesis perseus*, var. *visala*, Moore.

Common amongst grass and bushes.

11. *Mycalesis malsara*, Moore.

Common, settles on the road in damp places.

12. *Yphthima philomela*, Johanssen.

Frequents grass and herbage, where I found it common.

13. *Acræa vesta*, Fabricius.

Excessively common. It has a weak flight, continually settling with closed wings on a flower or the end of a branch.

14. *Cethosia biblis*, Drury.

Common all through the Terai and up to Chunabatti. The rich red of its upper surface with a lovely violet reflection makes this species one of the handsomest insects on the wing I know.

15. *Cirrhochroa aoris*, Doubl. Hew.

Not uncommon: it has a quick flight, and very much resembles an *Argynnis* on the wing.

16. *Cirrhochroa mithila*, Moore.

Rarer than *C. aoris*, and only seen in the Terai.

17. *Cynthia erota*, Fabricius.

Two males only taken just above the Terai. This species has a very bold, strong flight.

18. *Symbrenthia hyppoclus*, Cramer.

Two specimens taken near Chunabatti.

19. *Pyrameis indica*, Herbst.

Flying in numbers round the Chunabatti Dâk Bungalow.

20. *Junonia lemonias*, Linnæus.

Common.

21. *Junonia laomedia*, Linnæus.

Seen only in the Terai.

22. *Junonia iphita*, Cramer.

Only one specimen taken.

23. *Ergolis ariadne*, Linnæus.

Common everywhere in the lower hills and plains.

24. *Cyrestis thyodamas*, Boisduval.

One male only taken. It settled as is usual with this species with its wings wide expanded and touching the ground all round at the edges, the fore-wing being much pushed forward, leaving quite a large space between it and the hind-wing.

25. *Hestina nama*, Doubleday.

Males only taken on the lower hills. On the wing it much resembles *Danais tytia*.

26. *Euripus halitherses*, Doubl. Hew.

I only saw two females of this species, and mistook them for *Euplœa* (*Salpinx*) *rhadamanthus* which they evidently mimic, not only in form and coloration but also in the slow flapping flight and the habit of settling in open places so characteristic of *Euplœas*.

27. *Limenitis procris*, Cramer.

One only taken in the Terai. It is a high soaring insect, settling often on the outer leaves of the boughs of trees. If disturbed it always returns to the same spot from whence it is driven off.

28. *Neptis hordonia*, Stoll.

Common in the Terai.

29. *Neptis viraja*, Moore.

One female only taken in the Terai.

30. *Neptis aceris*, Lepechin.

Common in the Terai.

31. *Neptis emodes*, Moore.

One specimen only taken.

32. *Neptis cartica*, Moore.

Both sexes taken in the Terai.

33. *Neptis susruta*, Moore.

Two males taken in the Terai.

34. *Athyma leucothoë*, Linnæus.

A single male in the Terai.

35. *Athyma selenophora*, Kollar.

Males common in the Terai.

36. *Athyma inara*, Doubl. Hew.

Seen only in the Terai. The males of this genus are especially partial to settling on damp spots to suck up the moisture.

37. *Apatura parysatis*, Westwood.

Males common along the road below Chunabatti.

38. *Nymphalis athamas*, Drury.

A fine male of the pale greenish-white (almost pure white) variety taken just above the Terai.

39. *Zemeros flegyas*, Cramer.

Very common all along the road through the lower hills.

40. *Polyommatus sangra*, Moore.

The commonest "Blue" amongst the grass in the Terai and toward Siligori.

41. *Lampides ardates*, Moore.

Very common everywhere, settled on damp spots.

42. *Lampides rosimon*, Fabricius.

Also common.

43. *Lampides ælianus*, Fabricius.

A single male taken in the Terai.

44. *Lampides elpis*, Godart.

A Terai insect. On the wing it presents a very curious appearance on account of its alternately completely opening and shutting its wings, the contrast between the brilliant metallic-blue of the upper surface and the dark dull underside being very great.

45. *Lampides puspa*, Horsfield.

Common throughout the Sikkim hills. This species seems to take the place of *L. kashmira*, the commonest "Blue" in the North-West Himalayas, which is apparently not found much further west than Kumaon.

46. *Lampides kandarpa*, Horsfield.

A single specimen only taken in the Terai.

47. *Ilerda epicles*, Godart.

Common in the Terai and lower hills. The genus to which this species belongs is one that is essentially a frequenter of rank herbage, being always commonest where the ground has been disturbed by man, and weeds have sprung up.

48. *Hypolycæna erylus*, Godart.

Males very common all through the Terai and up to Chunabatti. Only one female taken.

49. *Pseudodipsas bengalensis*, Moore.

Common, settled on moist places on the road.

50. *Curetis bulis*, Doubl. Hew.

Males common in the Terai, settled on the road.

51. *Surendra quercetorum*, Moore.

One female taken in the Terai.

52. *Terais hecabe*, Linnæus.

Common between Siligori and the Terai.

53. *Pieris nerissa*, Fabricius.

Papilio amasene, Cramer, pl. 44, A.

A single specimen of this apparently very variable Pierid taken in the Terai. The Sikkim specimens are always much larger than those from other parts of India.

54. *Appias hippo*, Cramer.

Common near Chunabatti.

55. *Tachyris indra*, Moore.

A few males seen near Chunabatti.

56. *Catopsilia pyranthe*, Linnæus.

Common in the Terai and towards Siligori.

57. *Hebomoia glaucippe*, Linnæus.

A single male seen near Chunabatti. It has a very rapid flight; when settling on a flower it is very inconspicuous, the mottled hind-wing and the apex of the fore-wing which is also much mottled and which alone is left uncovered by the hind-wing, render it difficult to see on account of its close resemblance to a dead leaf.

58. *Ixias evippe*, Drury.

Very common near Chunabatti. This species has a very rapid, strong flight, but continually settles.

59. ? *Ornithoptera pompeus*, Cramer.

Three specimens seen, sailing high amongst the trees.

60. *Papilio helenus*, Linnæus.

Not uncommon in the lower hills.

61. *Papilio polytes*, Linnæus.

One or two seen in the Terai.

62. *Papilio androgeus*, Cramer.

A female, second form, taken just above the Terai, where the road commences to ascend the hills.

63. *Papilio aristolochiæ*, Fabricius.

I took several battered specimens in the Terai.

64. *Papilio philoxenus*, Westwood.

Not uncommon near Chunabatti. I took several specimens, but all except one, a female with an expanse of 5·9 inches, were much broken. It sails about in the open, often high up amongst the trees, and apparently quite safe from the attack of birds, its strong scent, perceptible a couple of yards off even now, three months after it was caught, being probably most distasteful to insectivorous birds.

PART II.

Butterflies taken on the road between Chunabatti, 2,260 feet, and Kurseong, 4,840 feet.

(1.) *Danais melaneus.*

Common just above Chunabatti.

(2.) *Danais aglea.*

One only taken.

(8.) *Lethe rohria.*

Common along the road.

(11.) *Mycalesis malsara.*

One male only taken.

65. *Mycaleris gopa*, Felder.

A single male. This species is new to the Museum collection.

66. *Yphthima sakra*, Moore.

Common by the roadside.

67. *Yphthima nareda*, Hewitson.

Less common than the preceding.

(13.) *Acræa vesta.*

The larvæ and pupæ of this insect covered the weeds all along the roadside. In the North-West Himalayas it is a local and rare species, in Sikkim it is the commonest butterfly seen.

(14.) *Cethosia biblis.*

Many seen.

68. *Cethosia cyane*, Drury.

A much rarer insect than the preceding, a few specimens only seen.

(18.) *Symbrenthia hyppoclus.*

One only taken. It is a very rapid flyer for so small an insect, but it frequently settles.

69. *Junonia asterie*, Linnæus.

70. *Precis veda*, Kollar.

A water-loving insect, I have never taken it except in beds of streams, up and down which it flies keeping to a regular beat, and occasionally settling on a leaf, darting off in pursuit of any intruder venturing near, only to return to the same resting place. It is a wary insect and not easy to capture unless waited for in the line of its flight when a quick stroke of the net may secure it.

(25.) *Hestina nama.*

Males only met with commonly.

(39.) *Zemeros flegyas.*

Very common, settled on the road and pathways.

(41.) *Lampides ardates.*

(45.) *Lampides puspa.*

All the females that I have seen of this species have been smaller than the males.

(54.) *Appias hippo.*

Both sexes seen, males common. The intensity of the crome-yellow apical spot on fore-wing and the ground-colour of the hind-wing seems variable, some specimens being much darker than others.

71. *Pieris canidia*, Sparrman.

Common near Kurseong.

(57.) *Hebomoia glaucippe.*

An occasional one seen.

72. *Hesperia eltola*, Hewitson.

One specimen only.

73. *Satarupa bhagava*, Moore.

One taken near Chunabatti.

PART III.

Butterflies taken on the road between Kurseong, 4,840 feet, and Darjiling, 6,885 feet.

On both occasions, both going to and returning from Darjiling, I had no sunshine when traversing this piece of road, which accounts for the small number of Butterflies observed.

74. *Lethe sidonis*, Hewitson.

Males excessively common all along the road from about 5 miles above Kurseong to Darjiling. I only took one female, it hardly differs from the opposite sex.

(66.) *Yphthima sakra.*

A few specimens seen.

75. *Limenitis daraxa*, Doubl. Hew.

Only two specimens seen. It is a very pretty insect on the wing, very rapid in its movements. It always settles with its wings wide outspread.

(45.) *Lampides puspa.*

Not uncommon, settled on the road in moist places.

76. *Ilerda androcles*, Doubl. Hew.

Three males taken, many others seen.

PART IV.

The Butterflies enumerated in this part were taken on the road between Darjiling and the Badamtan Tea Estate; the greater portion between elevations of from 5,000 down to 3,500 feet.

(3.) *Danais septentrionis.*

Very common at the lower elevation.

(6.) *Euplœa (Trepsichrois) midamus.*

Many specimens of both sexes on flowers in the garden at Badamtan.

77. *Lethe kansa*, Moore.

A single male.

(10.) *Mycaleris perseus* var. *visala.*

Common along the pathways.

(14.) *Cethosia biblis.*

Both sexes very common.

78. *Neptis amba*, Moore.

A single male.

(38.) *Nymphalis athamas.*

A single male of the green variety.

79. *Abisara fylla*, Doubl. Hew.

A fine male of this rare species.

80. *Dodona ouida*, Moore.

One male.

(49.) *Pseudodipsas bengalensis.*

Common, only males observed.

81. *Pieris nadina*, Lucas.

One female. A most rapid insect on the wing, reminding one much more of a *Tachyris* than a *Pieris*.

82. *Papilio paris*, Linnæus.

I took several males hovering over moist spots on the bank of a rivulet which crosses the road near Badamtan.

PART V.

All the Butterflies referred to in this last part were obtained in the valley of the Great Runjeet, at an average elevation of about 1,000 feet only. The road follows the course of the river, and passes through a magnificent forest with an almost impenetrable undergrowth of bamboo, rattan-cane, &c. The road is often crossed by small streams of water running into the Runjeet, and it was on the moist ground bordering these streams that I took most of the butterflies mentioned below. In places they were so abundant that when approached, they actually rose like a cloud presenting the most varied colours, forms and sizes. All along the road, however, butterflies were in wonderful profusion, never in my life before have I seen such numbers together belonging to so many species.

83. *Lethe chandica*, Moore.

Males common.

84. *Lethe mekara*, Moore.

Males settled on damp spots on the road.

(8.) *Lethe rohria.*

This appears to be the commonest *Lethe* in Sikkim.

85. *Neope bhadra*, Moore.

I found this most beautiful Satirid very common all along the road, settled with closed wings in damp places. On being disturbed it immediately flies off into the jungle, where, settled amongst dead leaves it is completely hidden.

(10.) *Mycalesis perseus* var. *visala.*

Males plentiful as usual.

(11.) *Mycalesis malsara.*

Also common.

86. *Mycalesis anaxias*, Hewitson.

A single male taken.

(12.) *Yphthima philomela.*

Common amongst the grass.

87. *Zipaetis scylax*, Hewitson.

Common. It has the habits of a *Mycalesis.*

88. *Elymnias undularis*, Drury.

A few males only seen.

89. *Dyctis patna*, Westwood.

A single male which I thought was a specimen of *Euplæa* (*Trepsichrois*) *midamus* (an insect I did not see at all in the Runjeet valley) when on the wing and captured as such, so admirably does this insect "mimic" the *Euplæa*.

90. *Discophora celinde*, Stoll.

Males common all along the road settled with closed wings on damp spots. When they fly they are particularly handsome, the deep indigo-blue of their uppersides glistening beautifully in the sun-light.

91. *Thaumantis diores*, Doubleday.

A single specimen seen of this lovely insect.

(14.) *Cethosia biblis.*

Common.

92. *Kallima inachis*, Boisduval.

Three seen, one settled on a damp spot, the other two flying along the road and occasionally turning off at right angles to it to settle with closed wings and *head downwards* on a stem of bamboo, where of course their close similitude to a dead leaf rendered their detection, unless the actual spot where they settled was marked, almost an impossibility. Their suddenly turning off to settle at right angles to their line of flight is a characteristic I have observed in no other butterfly.

(23.) *Ergolis ariadne.*

Common as usual.

(24.) *Cyrestis thyodamas.*

Not very common.

93. *Cyrestis risa*, Doubl. Hew.

Very common. This species as well as *C. thyodamas* has the habit of suddenly settling, with wings wide outspread, on the *underside* of a leaf parallel to the ground, where it is completely hidden. This feat of gymnastics is confined to this genus alone as far as my experience goes and must be a great protection to it from its enemies, the disappearance of the insect is so rapid that unless one has actually watched it settle on the leaf it seems like magic.

94. *Stibochiona nicea*, Gray.

Very common. It has a bold flight, is very pugnaceous, and always settles with expanded wings on a leaf or similar resting-place only to soar off in pursuit of the first intruder venturing near. It always returns to the same spot.

(25.) *Hestina nama.*

Males common.

(26.) *Euripus halitherses.*

Males only seen. It has a rapid flight, and never settles with expanded wings in conspicuous places as the female does.

95. *Lebadea ismene*, Doubl. Hew.

Common. It has a somewhat weak flight.

(28.) *Neptis hordonia.*

Common.

(31.) *Neptis emodes.*

Common.

(33.) *Neptis susruta.*

One male only taken.

96. *Athyma mahesa*, Moore.

A single pair taken.

(35.) *Athyma selenophora.*

Common.

97. *Adolias kesava*, Moore.

One male.

98. *Adolias sananda*, Moore.

A single male.

99. *Adolias apiades*, Ménétriés.

Both sexes very common. They usually settle with expanded wings like the rest of the genus, but not invariably as some genera (*Cyrestis Shibochiona*, &c.,) do.

(37.) *Apatura parysatis*, Westwood.

The females are evidently very sluggish, out of dozens of males I did not seen one female.

(38.) *Nymphalis athamas.*

Green variety common.

100. *Nymphalis polyxena*, Cramer.

A single specimen of one of the numerous varieties (? species) of this insect.

(39.) *Zemeros flegyas.*

Common.

101. *Lampides malaya*, Horsfield.

Common, settled on moist places. The specimens differ in some minute particulars from the Javan ones described by Horsfield.

102. *Lampides decidia*, Hewitson.

Decidedly common.

103. *Lampides parrhasius*, Fabricius.

One male.

(44.) *Lampides elpis.*

Apparently confined to low elevations.

104. *Aphnæus syama*, Horsfield.

One female only seen. The whole of the species in this genus fly with the greatest rapidity.

(47.) *Ilerda epicles*, Godart.

Common.

105. *Hypolycæna etolus*, Fabricius.

Very common. It is a rapid flyer, and on the wing at once reminded me of one of the common blue-bodied Dragon-flies which abound everywhere near water. Is it possible that a butterfly has "mimiced" a *Libellula*?

106. *Deudorix petosiris*, Hewitson.

One male of this somewhat rare species.

(50.) *Curetis bulis.*

Common.

107. *Arhopala centaurus*, Fabricius.

One male taken.

108. *Pontia xiphia*, Fabricius.

I met with many specimens of this pretty, weak-flying species.

(81.) *Pieris nadina.*

One male.

109. *Delias pasithoë*, Linnæus.

Two specimens only of this rich-coloured species.

110. **Delias agostina*, Hewitson.

Two male specimens, both settled on damp spots.

111. *Eronia avatar*, Moore.

One very fine male.

(56.) *Catopsilia pyranthe.*

Common.

112. *Papilio astorion*, Westwood.

Both sexes fairly common.

(60.) *Papilio helenus.*

Common.

(62.) *Papilio androgeus.*

Males common.

113. *Papilio sarpedon*, Linnæus.

Common. This species, as also ***P. cloanthus***, Westwood, is particularly fond of imbibing moisture from damp spots on the ground, and will return to the same place however often disturbed.

114. *Papilio agamemnon*, Linnæus.

Common, but all the specimens much worn.

115. *Tagiades dasahara*, Moore.

Common. Always settles, like the rest of the genus, with wings wide outspread.

116. *Pterygospidea menaka*, Moore.

One specimen. Also settles with outspread wings.

117. *Ismene bengaminii*, Guérin.

Two specimens.

118. *Ismene amara*, Moore.

One specimen. The species of this genus as far as I know always settle with closed wings.

119. *Hesperilla (? Halpe) luteisquama*, Mabille.

One male.

120. *Pamphila (? Halpe) zema*, Hewitson.

Common, settled on moist spots.

121. *Pamphila augias*, Linnæus.

One male.

122. *Pamphila mæsa*, Moore.

One specimen.

123. *Pamphila gola*, Moore.

One specimen.

(72.) *Hesperia eltola.*

Common.

124. *Hesperia chaya*, Moore.

Common. This is the widest spread and commonest *Hesperia* in North India, met with everywhere from the plains to 8,000 feet elevation.

125. *Hesperia ? semamora*, Moore.

One specimen. A new species to the Museum collection.

126. *Astictopterus diocles*, Moore.

The commonest *Hesperia* seen. Settles with closed wings.

127. *Plesioneura sumitra*, Moore.

One specimen. Always settles with expanded wings, is very swift on the wing, and has the habit of executing an aërial patrol up and down a small space.

128. *Plesioneura alysos*, Moore.

Common, both sexes taken, and all with *one* subapical white spot on fore-wing. It has the same habits as the preceding.

129. *Nisionades salsala*, Moore.

One specimen. It is common in shady places amongst trees on the outskirts of Calcutta, and always settles with closed wings.

The above 129 species of Butterflies were all taken under disadvantages. There was but little sun during the five days I collected, and I was obliged to cover a large extent of ground each day, so had no time to pause long in likely localities, having literally to catch as I walked. I only mention this to show what can be done in Sikkim in the way of collecting and how exceeding rich it is in *Rhopalocera*, could I have stopped longer in each place I should probably and without exaggeration have collected at least double the number of species here recorded.

V.—*List of Earthquakes recorded in Assam during the years* 1879 *and* 1880.—*By the* GOVERNMENT OF ASSAM. (*Communicated by the* METEOROLOGICAL REPORTER TO THE GOVERNMENT OF BENGAL.)

In the following list the earthquakes marked with an asterisk * were ascertained not to have been felt in other localities than those which are mentioned.

Date.	District.	Time of occurrence.	Duration.	Apparent direction.	Extent of damage, if any and general Remarks.
1879. Jan. 3rd.	Golaghat, ...	7.15 A. M.	1 minute.	West to East.	None.
" "	Jaipur, ...	7.30 A. M.	5 minutes.	E. to W.	Severe.
" "	Darrang, ...	7.50 A. M.	30 seconds.	N. W. to S. E.	No damage shock very slight but vibration, after it of unusually long duration.
" "	Lakhimpur, ...	7.51 A. M. end of shock.	About 12 seconds.	From 192° magnetic bearing.	A very smart shock accompanied and preceded by the usual rumbling sound but having a rather sharper tone than ordinary. The oscillations about .8 of a second apart caused some damage, a very slight shock took place about 3 A. M. this morning.
" "	Khasi and J. Hills,	8 A. M.	3 seconds.	S. to N.	No damage, shock slight.
" "	Kamrup, ...	8 A. M.	4 seconds.	S. to E.	
" "	Jorhát, ...	8.30 A. M.	1 minute.	W. to E.	
" "	Sibsagar, ...	8.3 A. M.	2 minutes.	E. to W.	
" "	N. Lakhimpur, ...	8.15 A. M.	2 seconds.	Not recognizable.	Ascertained to have not been felt in Sylhet, Cachar, Goalpárá, Garo Hills, and Nowgong.
April 19th.	*Jowai, K. and J. Hills, ...	5 A. M.	15 seconds.	S. to N.	No damage.
May 10th.	*K. and J. Hills, ...	9 A. M.	10 seconds.	W. to E.	Do.

List of Earthquakes recorded in Assam during the years 1879 *and* 1880.—Continued.

Date.	District.	Time of occurrence.	Duration.	Apparent direction.	Extent of damage, if any and general Remarks.
1879.					
June 5th.	*Nowgong, ...	7.2 A. M.	2 seconds.	N. to S.	No damage.
„ 7th.	*K. and J. Hills, ...	6.30 P. M.	5 seconds.	W. to E.	Do.
„ 10th.	*Garo Hills, ...	7.15 P. M.	1 second.	W. to E.	Do.
„ 25th.	*Darrang, ...	12.20 P. M.	A few sec.	Not apparent.	Do.
Sept. 7th.	*Sibsagar, ...	11.40 P. M.	57 seconds.	N. W. to S. E.	Do.
„ „	*Lakhimpur, ...	11.35 P. M.	2 minutes.	West to East.	Do.
„ 17th.	*Nowgong, ...	12.30 P. M.	3 seconds.	N. to S.	A very slight shock, no damage.
„ 23rd.	*K. and J. Hills,	4.40 P. M.	3 seconds.	Not noticed.	Smart and marked shock no damage.
„ 24th.		9 A. M.	30 seconds.		
Oct. 3rd.	*Naga Hills, ...	12.10 P. M.	2 seconds.	S. E. to N. W.	No damage.
„ 8th.	†Kamrup, ...	2 A. M.	4 seconds.	N. to S.	Do.
„ „	†Darrang, ...	1.45 A. M.	10 to 15 sec.	N. W. to S. E.	Two consecutive shocks.
„ „	†Cachar, ...	12 45 A. M.	2 seconds.	N. E. to S. W.	None. Two smart shocks.
„ „	†Nowgong, ...	1.36 A. M.	2 m. 10 s.	S. to N.	Slight shock. No damage.
„ „	†Sylhet, ...	2 A. M.	30 seconds.	S. W. to N. E.	Smart shock. No damage.
„ „	†K. and J. Hills, ...	1.45 A. M.	30 seconds.	W. to E.	Do. do. do.
„ „	†Garo Hills, ...	1 A. M.	1 second.	W. to E.	Do. do. do.
Dec. 4th.	*Darrang, ...	4.30 A. M.	5 seconds.	Not known.	None.
„ 12th.	*Nowgong, ...	7.35 P. M.	1 minute.	S. to N.	Slight shock. No damage.
„ „	*K. and J. Hills, ...	12.15 P. M.	5 seconds.	N. W. to S. E.	Do. do.
„ 16th.	*Darrang, ...	9.55 A. M.	A few sec.	Not observed.	The shock was very slight but there was a prolonged rumbling noise no damage done.
„ „	*Khasi and J. Hills,	5.30 A. M.	5 seconds.	W. to E.	No damage.

† Ascertained to have not been felt in Goalpara, Sibsagar, Lakhimpur and Naga Hills.

" 18th.	*Khasi and J. Hills,	5.30 P. M.	15 seconds.	W. to E.	Damage none.
" "	*Cachar, ...	6.45 P. M.	3 seconds.	S. W. to N. E.	Two shocks no damage.
" "	*Nowgong, ...	6 P. M.	90 seconds.	W. to E.	One sharp shock no damage.
" "	*Sibsagar, ...	6 P. M.	Less than 1 s.	W. to E.	None.
" "	*Darrang, ...	5.49 P. M.	A few sec.	N. W. to S. E.	Slight, no damage.
" "	*Naga Hills, ...	6.25 P. M.	4 seconds.	N. to S.	Nil.
" "	*Garo Hills, ...	6 P. M.	30 seconds.	S. E. to N. W.	No damage done.
" 22nd.	*Cachar, ...	6.30 A. M.	2 seconds.	S W. to N. E.	One shock no damage.
" "	*Khasi and J. Hills,	5.30 A. M.	5 seconds.	W. to E.	Do. do.
" 27th.	*Darrang, ...	12.6 P. M.	A few sec.	Nil.	The shock was slight but there was a prolonged rumbling noise. No damage.
1880.					
Jan. 2nd.	*Nowgong, ...	10 A. M.	10 seconds.	N. to South.	A slight shock, no damage done.
" 15th.	*Kamrup, ...	7.5 P. M.	5 seconds.	W. to East.	One slight shock, no damage done.
" "	*Darrang, ...	7 P. M.	20 seconds.	Not observed.	Do. do. do.
" "	*Nowgong, ...	7.10 P. M.	3 seconds.	W. to South.	Do. do. do.
" "	*Sibsagar, ...	7.20 P. M.	About 1 m.	N. W. to S.	Do. do. do.
" "	*Jorhat Sub-Div., .	7.30 P. M.	1 second.	S W. to N. E.	Do. do. do.
" "	*Khasi Hills, ..	6.30 P. M.	5 seconds.	E. to West.	Do. do. do.
" 17th.	*Khasi Hills, ...	7.40 A. M.	5 seconds.	S. to North.	Slight shock, no damage done.
" "	*Garo Hills, ...	7 P. M.	5 seconds.	S. E. to N. W.	Do. do. do.
" 27th.	*Nowgong, ...	8.40 P. M.	5 seconds.	N. to South.	Do. do. do.
" "	*Darrang, ...	About 9 P. M.	A few sec.	Not noticed.	Do. do. do.
Feb. 24th.	*Darrang, ...	11.44 P. M.	A few sec.	Not observed.	Do. do. do.
April 4th.	*Kamrup, ...	10.45 P. M.	2 seconds.	W. to East.	No damage done. There was one smart shock preceded by a rumbling noise as of distant thunder.
" "	*Khasi Hills, ...	6.50 P. M.	5 seconds.	N. to South.	No damage done.

List of Earthquakes recorded in Assam during the years 1879 *and* 1880.—Continued.

Date.	District.	Time of occurrence.	Duration.	Apparent direction.	Extent of damage, if any and general Remarks.
1880. May 1st.	*Nowgong, ...	3 A. M.	30 seconds.	N. to South.	One sharp shock. No damage done.
„ 2nd.	*Khasi Hills, ..	1.45 A. M.	20 seconds.	N. to South.	No damage done.
„ „	*Darrang, ...	3 A. M.	5 seconds.	W. to East.	Do. do.
„ „	*Nowgong, ...	2.50 A. M.	30 seconds.	N. to South.	One severe shock. No. damage done.
„ 17th.	*Sibsagar, ...	12 P. M.	2 seconds.	E. to West.	No damage done.
„ 18th.	*Khasi Hills, ...	10.15 P. M.	5 seconds.	N. to South.	Do. do.
June 7th.	*Khasi Hills, ...	10.30 P. M.	10 seconds.	N. to South.	Do. do.
„ „	*Sub-Division Hailakandy, ...	10.25 P. M.	10 seconds.	S. to North.	No damage done. Three very slight but distinct shocks.
„ 30th.	Sylhet, ...	4 A. M.	15 to 20 seconds each.	S. W. & N. East.	4 Shocks at intervals. No damage done.
„ „	Cachar, ...	4.5 A. M.	30 seconds.	E. to West.	2 Smart shocks. No serious damage done.
„ „	Khasi Hills, ...	3.55 A. M.	30 seconds.	N. to South.	2 Slight shocks at intervals. No damage done.
„ „	Kámrup, ...	4 A. M.	2 minutes.	N. W. to S. E.	2 Smart shocks. No damage done.
„ „	Goalpárá, ...	4 A. M.	2 minutes.	E. to West.	First a slight shock followed by a severe one. No damage done.
„ „	Garo Hills, ...	3.59 A. M.	2 minutes.	S. W. to N. E.	This was a double shock of considerable violence, accompanied and followed by a loud rumbling sound. No damage done but small articles were knocked off shelves, tables, &c.
„ „	Garo Hills, ...	7.45 A. M.	2 seconds.	S. W. to N. E.	A very slight shock.

" "	Darrang, ..	4.10 A. M.	2½ minutes.	N. W. to S. E.	Two consecutive shocks the first one was rather severe. No damage done.
" "	Nowgong, ...	4 A. M.	1 minute.	S. to North.	The earthquake lasted a long time, one of the longest felt. Very little damage done.
" "	Nowgong, ...	4.30 A. M.	5 seconds.	S. to North.	A slight shock.
" "	Sibsagar, ...	3.55 A. M.	30 seconds.	S. to North.	No damage done.
" "	Lakhimpur, ...	4.19 A. M.	30 seconds.	E. to West.	No material damage done.
" "	Lakhimpur, ...	4.24 A. M.	2 seconds.	E. to West.	
" "	Lakhimpur, ...	4.50 A. M.	5 seconds.	E. to West.	
" "	Lakhimpur, ...	5.23 A. M.	A few sec.	E. to West.	
" "	Naga Hills, ...	4 A. M.	1 minute.	S. to North.	Vibration was sufficiently strong to throw down decanters and such like articles, but no material damage.
" "	Mangaldai Sub-Div.,	4 A. M.	60 to 80 sec.	N. to South.	Two severe consecutive shocks. No damage done.
" "	Golághát Sub-Div.,	3.55 A. M.	2 minutes.	E. to West.	The outer wall of the treasury building cracked in four places. The shock was very severe and was succeeded by a slighter one about 3 or 4 minutes later.
" "	Jorehat Sub-Div.,...	4 A. M.	30 seconds.	N. E. to S. West.	No damage done.
" "	Karimgunj Sub-Div.,	4 A. M.	1 minute.	N. to South.	There was a second slight shock about 10 minutes after the first. The first shock was a severe one shook the wooden posts of the sub-divisional officer's Bungalow alarmingly. No damage done.
July 1st.	*Nowgong, ...	4.30 P. M.	3 seconds.	N. to South.	Slight shock. No damage done.
" "	*Khasi Hills, ...	3.15 P. M.	7 seconds.	N. to South.	Do. do. do.

List of Earthquakes recorded in Assam during the years 1879 *and* 1880.—Concluded.

Date.	District.	Time of occurrence.	Duration.	Apparent direction.	Extent of damage, if any and general Remarks.
1880.					
July 1st.	*Darrang, ...	4 P. M.	5 seconds.	Not noticed.	Slight shock. No damage done.
„ „	*Cachar, ...	4.30 P. M.	2 seconds.	S. W. to N. E.	Do. do. do.
„ 2nd.	*Khasi Hills, ...	1 30 P. M.	4 seconds.	S. to North.	No damage done.
„ 17th.	*Garo Hills, ...	4 30 A. M.	2 seconds.	Not known.	A very slight shock.
„ 20th.	*Garo Hills, ...	3.30 A. M.	1 second.	Not known.	Do. do
Aug. 2nd.	*Cachar, ...	2 A. M.	About 30 m.	Not known.	No damage done.
„ 5th.	*Khasi Hills, ...	7.45 A. M.	10 seconds.	S. to W.	None.
„ 16th.	Kamrup, ...	11½ P. M.	1 second.	N. W. to S. E.	One shock, preceded by a rumbling noise like distant thunder. No damage done.
„ „	*Khasi Hills, ...	11.30 P. M.	5 seconds.	W. to South.	No damage done.
„ 21st	*Darrang, ...	3.30 P. M.	10 seconds.	W. to East.	No damage, felt only at Mangaldai not at Tezpore.
„ 22nd.	*Garo Hills, ...	3.22 A. M.	3 seconds.	—	Short but rather violent shock. The usual rumbling was succeeded by a shock from below, upwards and then by a lateral shake sufficient to make house posts crack.
Sept. 4th	*Garo Hills, ...	3 A. M.	2 to 3 seconds.	—	None, a very slight shock.
„ „	*Goálpárá, ...	About 4 A. M.	2 seconds.	N. W.	Slight shock.
„ 11th.	*Darrang, ...	12.15 A. M.	10 to 15 sec.	N. E. to S. W.	None. The shock was marked and distinct, it was preceded by the usual loud rumbling noise.
„ „	*Nowgong, ...	12.15 A. M.	3 seconds.	N. to South.	A slight shock. No. damage done.
„ „	*Garo Hills, ...	12.15 A. M.	—	—	do. do.

,, 13th.	*Nowgong, ...	4.15 A. M.	3 seconds.	N. to South.	A slight shock. No damage done.
,, 23rd.	*Darrang, ...	2.17 P. M.	5 seconds.	S. to W.	Very slight No damage done.
,, 27th.	*Khasi Hills, ...	10·40 A. M.	15 seconds.	E. to W.	No damage done.
,, 30th.	*Darrang, ...	7.50 P. M.	5 to 6 seconds.	—	Severe shock followed about a minute later by a second shock not quite so severe. No damage done.
,, ,,	*Nowgong, ...	7.45 P. M.	2 seconds.	N. to South.	A slight shock. No damage done.
,, ,,	*Sibsagar, ...	8 P. M.	10 seconds.	E. to W.	No damage.
Oct. 20th.	*Darrang, ...	2.55 A. M.	A few sec.	Not noticed.	Slight. No damage done.
,, ,,	*Sibsagar Golághát,	4 A. M.	1 minute.	N. W. to S. E.	No damage.
Nov. 21st.	*Nowgong, ...	8 A. M.	3 seconds.	North to South.	A slight shock. No damage done.
Dec. 9th.	*Sibsagar, ...	6 A. M.	30 seconds.	East to West.	Slight. No damage.
,, ,,	*Lakhimpur, ...	4.30 A. M.	Not observed.	—	Very slight.
,, 12th.	*Khasi and Jaintea Hills, ...	1.45 P. M.	10 seconds.	S. W. to N. E.	Slight. No damage done.

INDEX.

☞ Names of new Genera or new species have an asterisk (*) prefixed.

Abisara bifasciata, 229
Acerotherium, 141
,, perimense, 26, 35
Acmella hydria, 183
Adolias acontius, 229
,, cibaritis, *ib.*
Æmona, 175, 248
,, amathusia, 175, 176, 177
,, lena, 177
* ,, pealii, *ib.*
Air, Logarithms for calculating weight of the, 63
Alces, 28
Amathusia, 175
,, ganescha, 228
Amblypodia centaurus, 234
,, erichsonii, *ib.*
,, narada, *ib.*
,, quercetorum, 235
,, sugriva, 232
,, vivarna, 235
Amphibia (Batrachia), fossil, 16
Amphicyon, 24, 25
,, palæindicus, 24, 34
Analysis of Hooghly water, 124, 128
,, Calcutta hydrant water, 93, 121
,, ,, tank waters, 96
,, ,, well waters, 105
Andaman Islands, new Papilio from, 178
Andes, Mastax from the Peruvian, 82
Ankistrodon indicus, 17, 18, 38
Anoa, 30
Anomodontia, 17
Anoplotherium, 26
Anoura, 38
Anthracotherium, 27, 30
,, silistrense, 27, 35
Anthropoid ape, 23
Anthropozoic fossil vertebrata, list of, 33
Antiphates, 180, 240
Antirrhoea, 248, 249
,, archæa, 249
Antilocapra, 29
,, acuticornis, *ib.*
,, cervicapra, *ib.*
,, palæindica, *ib.*
,, patulicornis, *ib.*
,, sivalensis, 29
Antilope cervicapra, 33
,, palæindica, 36
,, patulicornis, *ib.*
,, porrecticornis, *ib.*
,, sivalensis, *ib.*
Ape, anthropoid, 23
Aphnæus lohita, *var.* zoilus, 232
,, zoilus, *ib.*
Archegosaurus, 10, 16, 39
Arctomys caudatus, 7
,, himalayanus, *ib.*
Argala falconeri, 22, 37
Arhopala centaurus *var.* coruscans, 234
Arion, 154
Ariophanta, 151, 152, 184, 185, 193
,, ammonia, 152, 153
,, ampullarioides, 153
,, atrofusca, *ib.*
,, auris (? cysis), 152
,, bajadera = ammonia, *ib.*
,, cambojensis, *ib.*
,, cyclotrema, *ib.*
,, cysis, *ib.*
,, delibrata, *ib.*
,, foveata, 153
,, foveola for foveata, *ib.*
,, himalayana = interrupta, 152
,, immerita, 152, 185, 222
,, interrupta, 152, 154, 185
,, intumescens, 152
,, janus, *ib.*
,, javanica, 153
,, kadapaensis = nicobarica, 152
,, lævipes, 152, 153, 154, 185
,, laidlayana, 152, 155, 185
,, linstedti, 153
,, martini, *ib.*
,, nemorensis, *ib.*

Ariophanta nicobarica, 152
,, rareguttata, 153
,, regalis = vittata, 152, 153
,, retrorsa, 152
,, rumphii, *ib.*
,, ryssolemma (? thyreus), 152
,, saccata, 153
,, sannio, *ib.*
,, striata, *ib.*
,, thyreus, 152
,, trifasciata = lævipes, 152, 154
,, vittata, 152
*Assiminea beddomeana, 163
* ,, bifasciata, 162
* ,, dohrniana, *ib.*
* ,, hungerfordiana, 165
,, marginata, 162
* ,, microsculpta, 165
* ,, peaseana, 162
* ,, sinensis, 161
,, subconica, 162
* ,, templeana, 166
* ,, theobaldiana, 164
* ,, woodmasoniana, 163
Assimineinæ, 161
Assaminidæ, *ib.*
*Artiodactyla, 26, 35, 36
Arvicola wynnei, 244
Asia and Australia, high atmospheric pressure of, 70
Atella alcippe, 227
Atmospheric pressure in Asia and Australia, 70
Auchenia, 30
Australia and Asia, high atmospheric pressure of, 70
Aves, fossil 22, 37
,, mio-pliocene, 22
Batagur, 21, 37
,, dhongoka, 21, 34
Bataguridæ, 21
Batrachians, eocene, 38
,, fossil, 16
,, tertiary, 17
,, trias-jura, 16, 39
Belgrandia, 161
,, miliacea *var.* minor, 161
Belodon, 18
Bellia, 20, 21
,, crassicollis, 21
,, nuchalis, *ib.*
,, sivalensis, 21, 37
Bensonia, 199
Bharal, Zoological position of, 131
Bibos, 32
Birds, fossil mio-pliocene, 22
Bison priscus, 29
,, sivalensis, 29, 36
Blue Sheep of Thibet, 131
Bos, 29, 33
Bos acutifrons, 29, 36
,, namadicus, 32, 34
,, planifrons, 29, 36
,, platyrhinus, 29, 36
,, primigenius, 29
Bothriceps, 17
Brachyopina, 17
Brachyops, 17
,, laticeps, 16, 39
Brackish water-mollusks, new species of, 159
Bramatherium, 9
,, perimense, 28, 36
Bubalus palæindicus, 29, 32, 34, 36
,, platyceros, 29, 36
Bucapra daviesii, 29, 36
*Bythinia evezardi, 220
Bythiniinæ, 159
Calcutta, Water Supply of, 85
Callidryas crocale, 236
Camelopardalis sivalensis, 28, 36
Camelus sivalensis, 29, 30, 36
Canis curvipalatus, 24, 34
,, cautleyi, 24, 34
Capitodus indicus, 14, 38
Capitosaurus, 16
Capra, 133
,, falconeri, 29
,, perimensis, 29, 36
,, sivalensis, 29, 36
Carcharias, 15, 37
Carinated, fossil, 37
Carnivora, fossil, 31, 33, 34, 35
*Cataulus albescens, 214, 215, 216
,, austenianus, 214
* ,, calcadensis, 214, 215, 216
* ,, costulatus, 213, 214, 216, 222
,, eurytrema, 214
,, layardi, *ib.*
,, pyramidatus, *ib.*
,, recurvatus, *ib.*
,, templemanni, *ib.*
,, tortuosus, 214, 216
Catopsilia crocale, 236
Cautleya annuliger, 21, 37
Ceratodus hislopianus, 39
,, hunterianus, *ib.*
,, oblongus, 14
,, virapa, 39
Cervus duvaucellii, 28, 32, 34
,, latidens, 28, 36
,, namadicus, 32
,, megaceros, 28
,, simplicidens, 28, 36
,, sivalensis, *ib.*
,, triplidens, *ib.*
Cethosia nicobarica, 227
Cetiosaurus, 18
Chaca, 15, 37
Chæromeryx, 27
,, silistrensis, 36

Chalicotherium, 26
,, sivalense, 26, 35
Chelonia, 19, 20, 33, 34, 37, 38
Chœradodis cancellata, 82
,, laticollis, 83
,, peruviana, *ib.*
,, rhombicollis, 82
,, rhomboidea, 83, 84
* ,, servillei, 83
* ,, stalii, *ib.*
,, squilla, 84
,, strumaria, 82, 83
Cremnoconchus carinatus, 221
,, conicus, *ib.*
,, fairbanki, 183, 221
Cirrhochroa anjira, 227
Clarius, 15
Clerome, 175, 248
,, amathusia, 175, 176
Cochliodontidæ, 13
Collonia, 163
Colossochelys atlas, 20, 37
Conulema, 191
Corax, 14
,, incisus, 38
,, pristodontus, *ib.*
Corbicula iravadica, 183, 221
Ceratophora, 192
Crocodilia, 34, 37, 38, 39
Crocodilus, 19, 34
,, palustris (bombifrons, Gray), 19, 37
Cyclostomacea, 181
Cyclostomidæ, 183
Cynthia erota, 227
Cyrestis cocles, 228
,, formosa, *ib.*
,, thyodamus, *ib.*
Damonia (Emys) hamiltonii, 21
,, hamiltonoides, 37
Danainæ, 224
Danais chrysippus, 223
,, melanoleuca, 225
,, plexippus, 223
Dapedius, 13
,, egertoni, 39
Darjiling, atmospheric pressure at, 71
Dentition of Rhinoceros, 135, 140
Deudorix dieneces, 234
,, epijarbas, *ib.*
,, orseis, *ib.*
,, varuna, *ib.*
Diadema bolina, 228
Dicynodon orientalis, 17, 39
Dicynodontia (Anomodontia), 17, 39
Dimorphism in Papilio Castor, 146
Dinosauria, 17, 38
Dinotherium, 25, 26
,, indicum, 26, 35
,, pentapotamiæ, 26, 35
Dinotherium sindiense, 26, 35
Diodon, 10
,, foleyi, 14, 38
,, hystrix, 14
Dipnoi, 13, 14, 39
Dipsas epijarbas, 234
,, westermannii, 233
Diurnal lepidoptera, new species of, 134
,, ,, from Port Blair, 223
Discophora, 176
,, celinde, 226
Doleschallia bisaltide, 227
Dorcatherium, 28
,, majus, 28, 36
,, minus, 28, 36
Dromæus sivalensis, 23, 37
Dynamo-Electric Machine, 1, 167
Edentata, 30, 37
Elasmobranchii, 13, 14, 15, 37, 38, 39
Elephas, 25, 31, 32
,, antiquus, 31
,, namadicus, 9
Elymnias, 250
,, cottonis, 226
,, undularis, 223
Emyda, 21, 22
,, vittata (ceylonensis, Gray), 21, 37
Emydidæ, 19
Emys, 37
,, hamiltonoides, 21
Enchodus, 14
,, serratus, 38
Enhydriodon, 25
,, sivalensis, 35
Enhydris, 25
Ennea, 204
* ,, beddomei, 210
,, blanfordiana, 209
* ,, canarica, 210
,, cylindrelloidea, 209
* ,, exilis, 206, 207, 210, 222
* ,, macrodon, 205, 206, 207, 222
,, pirriei, 206, 207
,, sculpta, 206, 207
,, stenopylis, 209
* ,, stenostoma, 208, 222
* ,, subcostulata, 206, 207, 222
,, vara, 209, 211
Entelodon (Elotherium), 27
Equus namadicus, 33
,, primigenius, 27
,, sivalensis, 26, 35
Erebia kalinda, 247
* ,, mani, 247
* ,, shallada, 247
Eronia ceylonica, 237
,, gæa, *ib.*
,, naraka, *ib.*
,, pingasa, *ib.*
,, valeria (var. naraka), *ib.*

Erycinidæ, 229
Euelephas, 25, 31
" hysudricus, 25, 35
" indicus, 33
" namadicus, 31, 33
Euplecta, 185, 191, 192
" austeni, 191
" clamacterica, 191, 192
" ornatissima, 191
*Euplœa (Salpinx) adamsoni, 245, 248
" andamanensis, 226
" core, 226
" superba, 245
Eurytela horsfieldii, 228
" stephensii, 228
Expansion of metals, cubical, 66
Eye-pits, absent in Barhal, 131
Felis cristata, 24, 34
" grandicristata, 24, 34
Fishes, carboniferous, 12, 39
" cretaceous, 14, 38
" eocene, 14
" jura-triassic, 39
" mio-pliocene, 15
" plio-miocene, 37
" trias jura, 13
Fossil vertebrata of India, sketch of history of, 8
Frankland's method of water analysis, 90
Ganoidei, 13, 38, 39
Gharialis crassidens, 20, 37
" gangeticus, *ib.*
" leptodus, *ib.*
" (Leptorhynchus), 20
Gonioglyptus, 16
" longirostris, 39
Graculus, 22, 37
Halpe beturia, 242
Hapalus travankoricus, 215
Hebomoia glaucippe, 134, 235
* " rœpstorfii, 134, 150, 235
" sulphurea, 134, 236
" vossii, 134, 236
Helicarion, 185, 195, 198
Helicidæ, 151, 181, 182, 184
Helicinidæ, 182
Helix acuducta, 193
" anceps, *ib.*
" arata, *ib.*
" calpis, 211, 212
" camura, 193
" climacterica, *ib.*
" detecta, 192
" diplodon, 194
" effulgens, 197
" himalayana, 154
" immerita, 185
" indica, 185, 193
" ingrami, 193
" interrupta, 154
Helix intumescens, 155
" lævipes, 185
" laidlayana, 155
" layardi, 191
" ligulata, 157
" maderaspatana, 189
" orcula, 200
" ornatella, 183
" ornatissima, 193
" oxytes, 158
" plicatula, 197
" pollux, 158
" ponsa, 192
" serrula, 193
" shiplayi, *ib.*
" subopaca, 191, 192
" subruguta, 193
" tanshaurica, 220
" tenuicula, 196
" tugurium, 193
" vidua, 190
" vitrinoides, 185
Helladotherium, 28
Helodopsis, 13
" abbreviata, 39
" elongata, *ib.*
Helodus, 13
" abbreviata, *ib.*
" elongata, *ib.*
Hemibos, 29, 30
" acuticornis, 29, 36
" antilopinus, *ib.*
" occipitalis, *ib.*
Hemimeryx, 27, 36
Hemiplecta, 151, 184, 186
" basilessa, 157, 187, 189
" basileus, 157
" bataviana, 156
" beddomei, 157, 187
" biamensis, 156
" blanfordi, 157
" blainvilliana, 156
" bulla, 156
" castor, 157
" centralis, 156
" chenui, 157
" conoidalis, 156
" cuvieriana, *ib.*
" cycloplax, 157
" cymatium, *ib.*
" densa, 156
" distincta, *ib.*
* " enisa, 188, 222
" fulvida, 156
" gummata, *ib.*
" halata, *ib.*
" humphreysiana, 155, 156
" " *var.* gemina, 156
" labiata, 156
" " (= monticola, Hutton, 155)

Hemiplecta ligulata, 155, 156, 157
,, limaënsis, 156
,, lurida, *ib.*
,, neptunus, *ib.*
,, novæ-hiberniæ, *ib.*
,, orobia, 157
,, oxytes, *ib.*
,, panayensis, 156
,, pollux, 157
,, rubricata, 156
,, rufa, *ib.*
,, rufescens, *ib.*
,, semiglobosa, *ib.*
,, semigranosa, *ib.*
,, semirugata, 155, 156
,, setigera, 156
,, steursii, *ib.*
,, sylvicola, 157
,, theodori, 156
• ,, tinostoma, 187, 188, 222
,, tranquebarica, 155, 156
,, undosa, 157
,, velutina, 156
,, xanthotricha, 156
Hemitragus, 133
Herona andamana, 228
,, marathus, *ib.*
Hesperia aelianus, 229
,, beturia, 242
,, cahira, *ib.*
,, chaya, *ib.*
,, colaca, 241
,, lebadea, *ib.*
,, oceia, *ib.*
,, pandia, 242
Hesperidæ, 240
Hestia agamarschana, 224, 225, 242, 243
• ,, cadelli, 225, 242, 243
,, from Burmah, 223
• ,, hadeni, 242, 243
,, jasonia, 224
,, lynceus, *ib.*
Heterobranchus, 15
Heterocerous Lepidoptera, 249
Hippohyus, 27
,, sivalensis, 35
Hippopotamus, 27, 31, 32
• ,, iravadicus, 27, 35
,, namadicus, 32, 34
,, palæindicus, *ib.*
,, sivalensis, 27, 35
Hippotherium (Hipparion), 26, 27
,, antilopinum, 27, 35
,, gracile, 27
,, theobaldi, 27, 35
Homo, 33
Hooghly water, analysis of, 85, 124, 128
Human remains, 32
Hyæna crocuta, 24
,, felina, 24, 34
Hyæna sivalensis, 24, 34
,, striata, 24
Hyænarctos, *ib.*
,, palæindicus, 25, 34
,, sivalensis, 24, 34
Hydaspitherium, 28
,, grande, 28, 36
,, leptognathus, *ib.*
,, megacephalum, *ib.*
Hydraspis, 19, 22
,, leithii, 38
Hydrobia, 160
• ,, miliacea, 161
,, ,, *var.* minor, *ib.*
Hydobiinæ, 160
Hydroceninæ, 182
Hyopotamus, 27
,, palæindicus, 35
,, sindiense, 27
Hyotherium, *ib.*
,, sindiense, 27, 35
Hyperodapedon, 18, 39
Hypolimnas bolina, 228
,, misippus, 223
Hypolycæna andamana, 232
,, erylus, *ib.*
Hystrix sivalensis, 30, 37
Ibex, 133
Ichthyodorulites, 13
Ichthyosauria, 38
Ichthyosaurus, 11, 19
,, indicus, 38
Ichthyozoic fossil vertebrata, list of, 39
Ictitherium sivalense, 24, 34
Indian malacology, contributions to, No. XII, 181
Ismene aria, 241
,, chromus, 240
,, druna, 241
,, lebadea, *ib.*
Ixias andamana, 236
Junonia almana, 227
,, asterie, *ib.*
Kainozoic fossil vertebrata, list of, 34
Kallima albofasciata, 227
Labyrinthodon, 16
Labyrinthodontia, 39
Lacertilia, 20, 37, 39
Ladak mammals, note on some, 6, 7
Lameta, 38
Lamna, 14, 15, 37
,, complanata, 38
,, sigmoides, *ib.*
Lampides ardates, 229
,, ælianus, *ib.*
,, elpis, 230
,, pactolus? *ib.*
,, pandava, *ib.*
• ,, plumbeomicans, 231
Land mollusca, Indian, 151

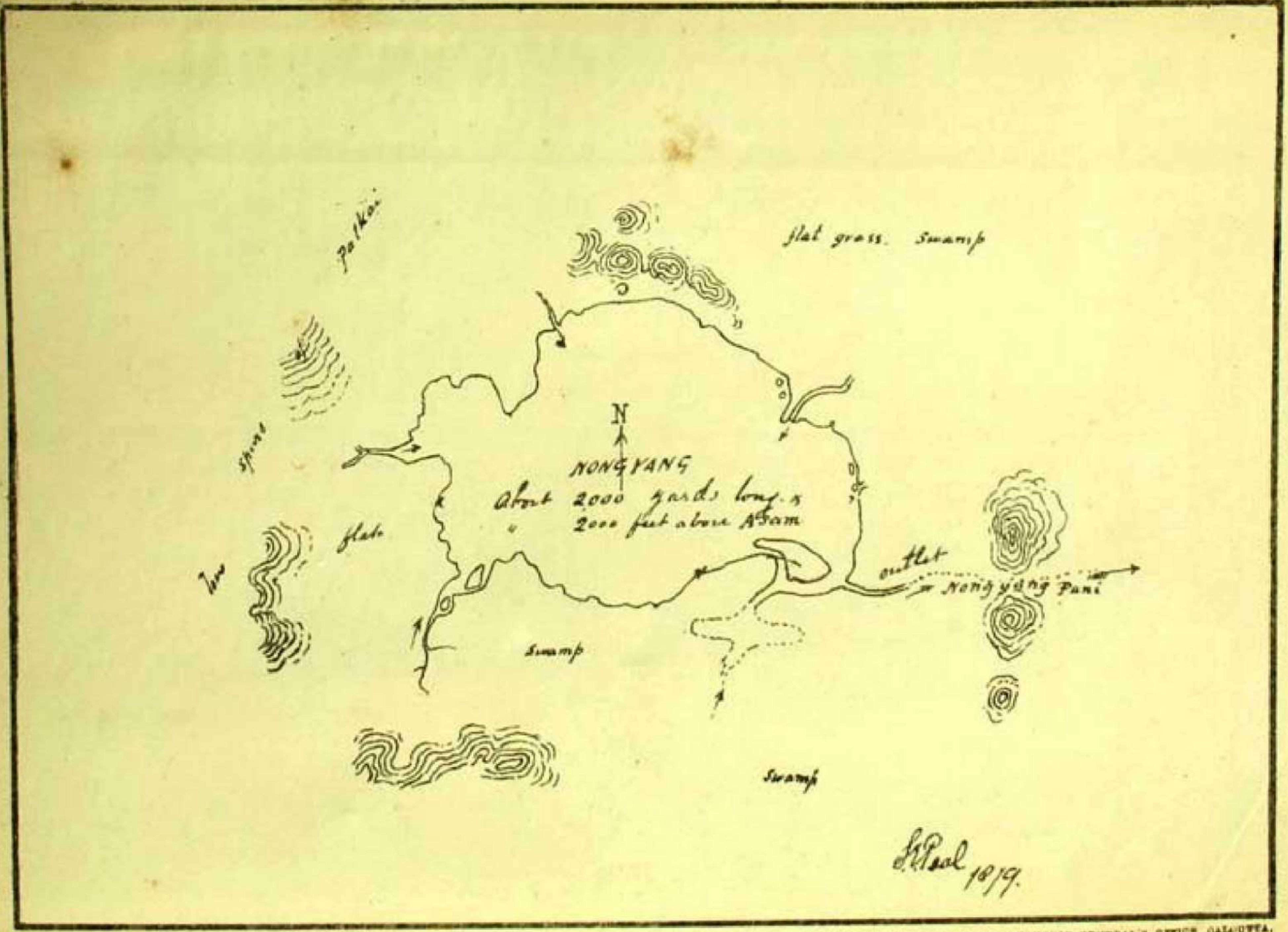
Larina burmana, 163
Lepidopterous genus Æmona, on the, 175
Lepidotus, 13, 14
,, breviceps, 39
,, calcaratus, *ib.*
,, deccanensis, *ib.*
,, longiceps, *ib.*
,, pachylepis, *ib.*
Leptobos falconeri, 29, 36
,, frazeri, 32, 34
Lethe europa, 226
,, latiaris, 246
* ,, maitrya, 245
* ,, satyavati, 246, 248
* ,, siderea, *ib.*
,, sidonis, 245, 246
*Libythea rohini, 248
Limenitis anarta, 229
,, procris *var.* anarta, *ib.*
,, selenophora, *ib.*
Listriodon, 26
,, pentapotamiæ, 26, 35
,, theobaldi, 35
Lithoglyphi, 161
Lithotis, 201
Littorinidæ, 183
Loxodon, 25
,, planifrons, 25, 35
Lutra, 6, 25
,, palæindica, 25, 35
,, vulgaris, 7
Lycæna ardates, 229
,, ælianus, *ib.*
,, elpis, 230
,, pandava, *ib.*
Lycænidæ, 229
Macacus, 24
,, rhesus, 32, 33
,, sivalensis, 34
Machærodus, 18
Machairodus palæindicus, 24, 34
,, sivalensis, *ib.*
Macrochlamys, 151, 184, 185, 192, 195, 196
,, calpis, 211
,, effulgens, 196
,, indicus, 195
* ,, platychlamys, 195, 196, 222
,, plicatula, 197
,, plicifera, *ib.*
,, prona, 198
,, tenuicula, 196, 197, 222
,, vitrinoides, 195
* ,, ? wynnei, 197, 198, 222
Madras, stone implements and human tibia from laterite of, 31
Mammals, fossil, 23
,, eocene, 23, 37
,, mio-pliocene, 23
Mammals pleistocene, 30, 33
,, plio-miocene, 34
,, recent, 32, 33
Manis sindiensis, 30, 37
Mantis cancellata, 82, 84
,, rhombicollis, 82
,, rhomboidea, 84
,, strumaria, 82
Mantodea, synopsis of the species of Chœradodis, *ib.*
Markhor, 29, 132
Marmots, 7
Martesia, 161
Mastax, 82
Mastodon, 25
,, falconeri, 25, 35
,, latidens, *ib.*
,, pandionis, 25, 33, 35
,, perimensis, 25, 35
,, sivalensis, *ib.*
Mastodonsaurus, 16
Megalosaurus, 18, 38
Megaloscelornis sivalensis, 22, 37
Meles, 25, 34
Mellivora, 25
,, sivalensis, 25, 34
Merycopotamus, 27, 30
,, dissimilis, 36
Melanitis ismene, 226, 250
,, leda, 226
Mesozoic fossil vertebrata, 38
Messaras erymanthis var. nicobarica, 227
Metals, cubical expansion of, 66
Methods of water analyses, 90
Microcystis, 183
,, calpis, 211
,, tenuicula, 196
Micropholis, 17
Mollusks, brackish-water, new species of, 159
Morphinæ, 176, 226, 248
Moschus, 4, 6
,, moschiferus, 6
Mus, 30, 32, 34, 37
Musk deer in Thibet, 4
Mycalesis blasius, 226
,, drusia, *ib.*
,, mineus, *ib.*
* ,, oculus, 247
,, onatas, *ib.*
,, radza, 226
Myliobatis, 14, 38
Myrina areca, 232
,, atymnus, 234
,, prabha, *ib.*
,, sugriva, 232, 233
,, tarpina, 233
Narbada beds, mammalian fauna of, 31
,, valley, implements from, 31
Nanina, 153, 154, 184, 185, 196, 197

Nanina austeni, 193
" calpis, 211, 212
" climacterica var. vidua, 190
" diplodon, 193
" effulgens, 196
" falcata, 193
" immerita, 185
" indica, 186
" jacquemonti, 198, 199
" koondaensis, 186
" oxytes, 157
" plicatula, 197
" shiplayi, 186
" sikrigallensis, 193
" tenuicula, 196
Nemorhædus, 131
*Neope bhima, 246
" moorei, *ib.*
Neptis andamana, 228
" khasiana, *ib.*
" mananda, *ib.*
Neritidæ, 183
New land and freshwater shells, 181
Nilghai, 29, 32
Nymphalidæ, 224
Nymphalinæ, 227
Odontaspis, 14
" constrictus, 38
" oxypeion, *ib.*
Ophidia, 20
Ornithoptera heliaconoides, 237
" heliconoides, *ib.*
Orthoderas, 82
Orthoptera, *ib.*
Otodus, 14
" busalis, 38
" divergens, *ib.*
" marginatus, *ib.*
" minutus, *ib.*
" nanus, *ib.*
" semiplicatus, *ib.*
Otter, 6
Omphalotropis, 183
* " andersoni, 216, 217, 222
" aurantiaca, 182, 183, 218
" distermina, 217, 218
" globosa, 217
" rubens, 217, 219
Ophidia, 37
Ovis, 29, 36, 131, 133
Oxyglossus, 17
" pusillus, 38
Oxyrhina, 14
" triangularis, 38
Oxytes, 151, 157
" avus, 157
" basilessa, *ib.*
" blanfordi, *ib.*
" castor, *ib.*
" " var. *a*, cherrænsis, *ib.*
Oxytes cycloplax, 157
" oxytes, *ib.*
" pallasiana, *ib.*
" pollux, *ib.*
* " sylvicola, 185, 186
" thyreus, 157
Pachygonia, 16
" incurvata, 39
Palæomeryx, 28, 36
Palæopithecus sivalensis, 23, 34
Palæoryx, 29, 36
Palæotherium, 26
Palæozoic fossil vertebrata, 39
Paludomus regulata, 220
" tanjorica, *ib.*
" travancorica, 219, 220, 222
Pamphilia gola, 242
" mæsoides, 242
Pangshura (Emys) tectum, 21, 34, 37
Papilio agamemnon, 238
" alcippe, 227
" almana, *ib.*
" androgeus, 237
" antiphates, 180, 240
" aristolochiæ, 223
" asterie, 227
" bisaltide, *ib.*
" bolina, 228
" castor, 144
" " dimorphism in, 146
" celinde, 226
" centaurus, 234
" chaon, 149
" charicles, 237
" clytia, var. flavolimbatus, 238
" cocles, 228
" core, 226
" coronis, 236
" crocale, 236
" dissimilis, 238
" doubledayi, 237
" dravidarum, 144
" epaminondas, 180, 238
" erota, 227
" europa, 226
" eurypylus, 238
" francisca, 226
" gambrisius, 228
" hecabe, 235
" hector, 223
" helenus, 148, 149
* " læstrygonum, 178, 180, 238, 240
" mahadeva, 144
" mayo, 237
" otrea, 226
" paulina, 237
" pollux, 146, 148
" " gynandromorphous form of female, 148
" polymnestor, 237

Papilio polytes, 223, 224
„ „ var. nihobarus, 237
„ rhodifer, 237, 240
„ valeria, 237
Papiliones, 224
Papilionidæ, 235
Papilioninæ, 237, 249
*Parantirrhœa marshalli, 248, 250
Parasuchus, 18, 39
„ hislopii, 18
Parthenos gambrisius, 228
Pelecanus cautleyi, 22, 37
„ mitratus, 22
„ sivalensis, 22, 37
Pelorosaurus, 18
Pemganga river, remains of hippopotamus from, 31
Perissodactyla, 35
Peruvian Andes, Mastax from, 82
Petalodus, 13
Petalorhyncus, *ib.*
„ indicus, 13, 39
Petrœus, 198
Pharella, 161
Phereporæ, 153
Philopotamis sulcata, 220
Pierinæ, 235
Pieris albina, 237
„ coronis, *var.* lichenosa, 236
„ nadina, *var.* nama, *ib.*
Pimelodus, 15
Pisces, carboniferous, 12, 39
„ cretaceous, 14, 38
„ eocene, *ib.*
„ mio-pliocene, 15
„ trias-jura, 13
Ploteus, 22
Plectopylis, 151
Plesioneura alysos, 241
Plesiosauria, 39
Plesiosaurus, 11
„ indicus, 18, 39
Psammodus, 13, 39
Psephodus indicus, *ib.*
Pseudælurus, 24
„ sivalensis, 24, 34
Poecilodus paradoxus, 13, 39
Polyommatus elpis, 230
„ sangra, 232
Pomatiopsinæ, 161
Port-Blair, atmospheric pressure at, 70
Portax, 29, 32, 36
„ namadicus, 32, 34
Post-tertiary fossil vertebrata, list of, 33
Pound, definition of English Commercial, 43
Primates, 33, 34
Proboscidia, 25, 30, 31, 33, 35
Productus-limestone strata, 12
Pseudois, 131, 133
Pseudois barhal, 131
„ nahura, *ib.*
Pterygospidea ravi, 241
Ptychodus, 14
Ptychodus latissimus, 38
Ptychognathus, 17
Pulmonifera, 151
Pupa (Pupisoma) evezardi, 199, 200
„ „ lignicola, 200
Pycnodus, 14, 38
Python, 20
Rana pusilla, 17
Raphaulus (Streptaulus) blanfordi, 212
Ratitæ, 37
*Realia (Omphalotropis) andersoni, 216, 217, 218, 222
* „ „ decussata, 218
„ „ distermina, 217
„ „ globosa, 217
* „ „ pallida, 217,218, 222
„ „ rubens, 217
Reptiles cretaceous, 18, 38
„ eocene, 19, 38
„ fossil, 17
„ jura triassic, 38
„ mio-pliocene and pleistocene, 19, 34
„ plio-miocene, 37
„ recent alluvia, 33
„ trias-jura, 17
Rhinoceros deccanensis, 31, 33, 141
„ indicus, 26, 31, 32, 33, 135
„ iravadicus, 26, 35
„ javanicus, 137, 140
„ namadicus, 31, 33
„ notes on the Dentition of the, 135
„ palæindicus, 26, 35
„ platyrhinus, 26, 35
„ sivalensis, 26, 35, 139, 141
„ sondaicus, 137
„ sumatrensis (sumatranus), 26, 137, 141
Rhinosaurus, 17
Rhizomys sivalensis, 30, 37
Rhopalocerous Lepidoptera, new species of, 245, 248
Rhynchosaurus, 18
Rhysota, 151
„ bulla, 156
Rissoidæ, 182
Rodentia, 30, 34, 37
Rotula, 151, 184, 186, 192
Sanitherium, 27
„ schlagintweitii, 35
Sargus, 15
Satyrinæ, 226, 248, 249
Saurozoic fossil vertebrata, list of, 38
Selachii, 13

Semnopithecus, 24
,, subhimalayanus, 34
Sesara diplodon, 193, 194, 195
,, ingrami, *ib.*
Sigmodus dubius, 12, 39
Silurichthys, 15
Silurus, *ib.*
Sithon jangala, 233
,, jolcus, 232
,, kamorta, 233
,, phocides, 232
,, sugriva *var.* areca, *ib.*
,, tarpina, 233
,, westermannii, *ib.*
Situla, 191
Sivameryx, 27, 36
Sivatheriidæ, 28
Sivatherium, 9, 28
,, giganteum, 28, 36
Siwaliks of Sylhet, 9
Sphenodon, 18
Sphœrodus, 14
Spiraculum mastersi, 183
• ,, travancoricum, 212, 222
Stagonolepis, 18
Standard weights, verification of, 41
Stegodon, 25, 31
,, bombifrons, 25, 35
,, cliftii, *ib.*
,, ganesa, 25, 31, 33, 35
,, insignis, *ib.*
,, orientalis, 25
,, sinensis, *ib.*
Stenopus, 185, 192
Stenothyra, 164
• ,, blanfordiana, 160, 161
• ,, hungerfordiana, 159
,, minima, 160
• ,, woodmasoniana, 159
Streptaulus blanfordi, 212
Streptaxis cingalensis, 205
• ,, compressus, 201, 204, 222
• ,, concinnus, 203, 222
,, perrotteti, 205
• ,, personatus, 202, 204, 222
• ,, pronus, 204, 222
,, watsoni, 205
Struthio asiaticus, 23, 37
Succinea collina, 200, 201
,, girnarica, 200
Suchosaurus, 19
Sun-spot cycle, 70
Surendra latimargo, 235
,, quercetorum, *ib.*
Sus giganteus, 27, 32, 34, 35
,, hysudricus, 27, 35
,, indicus, 32, 33
,, punjabiensis, 27, 35
Symphædra teuta, 229
,, teutoides, *ib.*
Tachyris galathea, 237
,, paulina, *ib.*
Tagiades alica, 241
,, ravi, *ib.*
Tanaëcia acontius, 229
,, cibaritis, *ib.*
Tank waters of Calcutta, analyses of, 96
Tapirus, 26, 35
Telegonus thyrsis, 242
Teleostei, 13, 14, 15, 37, 38
Teredo (?) 161
Terias harina, 235
,, hecabe, *ib.*
Testudo, 20, 37
,, atlas, 20
,, leithii, 19
Tetraceros, 28
Tetraconodon magnum, 27, 35
Tetragonolepis, 13
,, analis, 39
,, oldhami, *ib.*
,, rugosus, *ib.*
Thalassia, 193
Thar, 133
Thaumantis, 175
Thaumatacanthus blanfordi, 13, 39
Thecla varuna, 234
Theora, 161
Theriozoic fossil vertebrata, list of, 34
Titanosaurus, 18, 19
,, blanfordi, 19, 38
,, indicus, 18, 38
Travancore, species of Trochalopterum from, 142
Tricula montana, 183
Trionyx, 21, 34, 37
,, gangeticus, 34
Trochalopterum fairbanki, 142, 143
• ,, jerdoni, 143, 144
,, meridionale, 142
Tuditanus radiatus,
Ungulata, 26, 27, 30, 33, 34, 35, 36, 37
Unio, 222
Ursus, 24, 34
,, namadicus, 31, 33
Valvata (?) microscopica, 161
Varanus, 20
,, sivalensis, 37
Verification of standard weights, 41
Vertebrata of India, Sketch of History of fossil, 8
Vishnutherium iravadicum, 28, 36
Vitrinoides, 192
Viverra bakeri, 24, 34
Wallace, on Papilionidæ of Malayan region, 149
Water analyses (Calcutta), 90, 105
,, density of, 65
,, supply, 85, 124
Weights, description of System of English, 42

Weights verification of standard, 41
  „ which should be made use of in a series, considerations as to the, 61
Xanthotænia, 176
Xesta, 151, 157, 184
*Xestina albata, 189, 222
  „ belangeri, 189
  „ bombayana, *ib.*
  „ maderaspatana, *ib.*
  „ semirugata, *ib.*
Xestina tranquebarica, 189
Xystracanthus, 13
  „ giganteus, 13, 39
  „ gracilis, *ib.*
  „ major, *ib.*
Zeuxidia, 175, 176
Zonites, 185, 198
Zonitidæ, 151
Zoological position of Bharal, 181
Zophoessa atkinsonia, 245
* „ jalaurida, *ib.*



PHOTOZINCOGRAPHED AT THE SURVEYOR GENERAL'S OFFICE, CALCUTTA.

PLAN OF NONGYANG LAKE.

PLATE IX.

S. E. Peal
Feb 1879

OR GENERAL'S OFFICE, CALCUTTA.

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

Part II.—PHYSICAL SCIENCE.

No. II.—1881.

VI.—*On the relations of cloud and rainfall to temperature in India, and on the opposite variations of density in the higher and lower atmospheric strata.*—*By* HENRY F. BLANFORD, F. R. S., *Meteorological Reporter to the Government of India.*

[Received 25th March, 1881;—Read 6th April, 1881.]

In the Report on the Meteorology of the year 1879, which I drew up last autumn, and which will shortly be issued, I had occasion to discuss the two subjects enumerated in the above title, in connection with the anomalous variations of temperature and barometric pressure, exhibited by the Indian registers during the last two or three years. As, however, they have a much wider bearing than merely in reference to the cotemporary phases of our Meteorology, and indeed may claim to rank among the more important physical operations which influence Indian Meteorology, I have thought that it might be of interest to extract these notices from their original setting in the pages of the Annual Report, and to ask the Society to give them an independent circulation in its Journal.

I have been the more prompted to do this, because, in a recent number of the Journal of the London Meteorological Society,* Mr. Douglas Archibald has discussed at length a nearly cognate subject, *viz.*, the "Variations in the barometric weight of the Lower Atmospheric Strata in India." In this paper, Mr. Archibald refers to certain articles which the late Mr.

---

* Vol. VI. New Ser. No. 36, October 1880. Mr. Archibald's paper was read on the 19th May 1880.

J. Allan Broun, F. R. S. contributed to "Nature" shortly before his decease, and in which he endeavoured to show, that while air must unquestionably expand and contract according as its temperature rises and falls, the variation in density so produced in no way adequately accounts for the annual variation of monthly mean barometric pressure at the surface of the earth. Mr. Archibald, following a method which I proposed in a paper in the Phil. Trans. in 1874, computes the variations of density, which the atmospheric column below Darjiling undergoes month by month, in consequence of the variations of temperature, humidity and top-pressure; and shows that the lower stratum of the atmosphere, thus subjected to a physical analysis, conforms in its changes, with near approximation, to the indications of theory; and that, of the several causes affecting its density and static pressure, temperature is by far the most influential. This conclusion is also that at which I arrived in the paper above referred to, working on far more restricted data than those discussed by Mr. Archibald, but the best then available to me.

Mr. Archibald has taken as the subject matter of his paper, the normal or average values of pressure, temperature &c., as given by many years' registers at Darjiling and Goalpara. In the latter part of the present paper, I have compared the abnormal variations of temperature with those of the density of the atmospheric column, below the three hill stations Chakrata, Ranikhet and Pachmarhi, and have shown that, in their case also, temperature and density vary inversely, in accordance therefore with the results previously obtained by myself and Mr. Archibald, and in accordance also with the indications of theory.

It seems, therefore, to be fairly established that, as regards the lower stratum of the atmosphere, the anomaly pointed out by the late Mr. Broun does not exist. Observation and theory are here as consistent as the character of the data would lead us to anticipate; and we must therefore look to the condition of the higher strata of the atmosphere, those which lie above the level of our Indian hill stations, Darjiling, Chakrata &c., for the explanation of the apparent inconsistency to which Mr. Broun drew attention. In connection with this enquiry, the facts brought forward in the present extracts from my report seem to me to have much significance.

I may mention that the whole of this was written and in type (for the Report) before I had seen Mr. Archibald's paper above referred to.

Some other general questions of importance are referred to incidentally in the course of discussion, in the extracted passages.

On the mean of all Indian stations, the temperature of the year 1879 was slightly below the average, but it was by no means generally so in Northern India. In the North-West Provinces and Bengal, the mean temperature of the year was slightly excessive; and in the Punjab, this was the case at as many stations as showed the opposite variation. This excess was due to the preponderance of the high temperatures of the first five months, which were not quite compensated by the depression of temperature which prevailed during the rains, and, more or less generally, in the later months of the year. In the Central Provinces, however, and Rajputana, the great depression of the closing months of the year more than counterbalanced the excess of the earlier months; and in the Dakhan and the Peninsula generally, a depression of temperature characterised the greater part of the year. In Burma and Arakan, only the first three months of the year showed an excess of temperature; that of the remainder of the year being rather below the average.

Thus the progressive increase of the average temperature of India, which, as was shown in the Meteorological report for 1878, had been in progress during the four years 1875-78, reached its climax in the last of these years, and has been followed by a considerable fall. The mean anomalies of the five years are as follows:—

	1875.	1876.	1877.	1878.	1879.
Number of Stations	72	72	74	74	70
Mean anomaly	—0·29°	+0·08°	+0·17°	+0·62°	—0·13°
Progressive variation	..	+0·21	+0·25	+0·45	—0·75

The result, therefore confirms the conclusion which I drew in the Meteorological report of 1878, and shows that the variation is not apparent only and due to any progressive change in the instruments employed. So far, it coincides with that found by Gautier and Köppen for land stations in the tropics generally; since the maximum coincides, approximately, with the recent minimum of sun-spots.

A recent notice by Dr. Köppen, in the July number of the Journal of the Austrian Meteorological Society, gives some highly interesting data of the temperature anomalies of large land areas of the Northern Hemisphere, during the last five years; which indicate that the oscillation of temperature, shown above, was not restricted to India, but was shared by a large portion of Europe and North and Central America. The data are reproduced in the following table, in which the temperature anomalies are reduced from Dr. Köppen's table, to their corresponding values in Fahrenheit degrees:—

	1875.	1876.	1877.	1878.	1879.
Central Europe, ...	—1·06	—0·14	+0·23	+0·59	—2·32
Eastern North America, ...	—2·30	—0·31	+2·02	+3·38	+0·38
San José Central America 10° N., ..	—0·72	—0·07	+1·31	+1·55	—0·47
European Russia South of 55° N., ..	—2·34	—0·72	—0·36	+1·80	?
Ditto ditto North, „ ..	—3·42	—1·08	—0·36	+2·70	?

In another table Dr. Köppen gives the temperature anomalies of the same years for those parts of Europe and Asia which show a departure from this regular oscillation. It is to be observed that these include all those countries which are most directly influenced by the Gulf-stream :—

	1875.	1876.	1877.	1878.	1879.
Scandinavian Peninsula, ..	—0·92	—1·06	+1·96	+0·90	—1·04
England, ...	—0·14	+0·52	+0·11	+0·18	—3·20
Scotland, ...	+0·49	—0·16	+0·74	+0·36	—2·05
Iceland and Faroe Isles, ...	+2·2	+0·9	—0·7	—0·5	+0·4
West Greenland, ...	+1·8	+0·9	+1·8	+3·6	?
Italy, ...	—0·7	+0·2	+0·4	..	?
Caucasus, 4 Stations	—0·7	+1·3	+1·1	+0·4	?
South-West Siberia and Amu Darya, 6 Stations, ...	..	—0·7	—0·5	+1·1	?
South-East Siberia and Pekin, 4 Stations, ...	+0·2	+0·4	+0·2	—0·02	?

The subject of Dr. Köppen's paper appears to have been suggested by a paper of Mr. Douglas Archibald's in 'Nature' (26th February 1880), wherein it is sought to show that the periodical heat waves, brought to light by Professor Piazzi Smyth, on the evidence of the rock temperatures of Calton Hill, Edinburgh, are dependent on variations in the mean cloudiness of the atmosphere ; since the periods of highest ground temperature are those of minimum cloud and *vice versâ*. This view of Mr. Archibald's, *viz.*, the dependence of temperature on cloud proportion, appears to be in part identical with that which I put forward originally in my paper, "On some recent evidence of the variation of the Sun's Heat," &c., in the XLVth Volume of this Journal (June 1875), wherein I endeavoured to show that, the temperature of the lower atmosphere, on the land surface, in India, depends much more on the quantity of cloud and on the rainfall than on that variation of the solar heat intensity, the periodicity of which was brought out in the data discussed in the paper. As regards India, I go beyond Mr. Archibald, however, in attributing even greater importance to the evaporation of rainfall than to obscuration of the sun by cloud.

In a short paper, written in reply to some criticisms of Dr. Hann and Dr. Köppen, which I have lately communicated to the Journal of the Austrian Meteorological Society, I had given some recent data which bear strongly on these views; since they show that both the ground temperature and that of the lowest stratum of the atmosphere are dependent, in a very high degree, on cloud and rainfall; and that, in India at least, this effect is so great, that it must, in all probability, outweigh and mask any direct influence of variations in the intensity of the solar radiation.

In the first place, I give a comparison of the mean temperatures of the air and ground at Alipore (Calcutta) Observatory, in the first five months of the two years 1879 and 1880. The air temperatures are those recorded under a shed of the usual pattern, consisting of a thatched roof simply supported on posts, and open, therefore, on all sides to the wind, beneath which the instruments are exposed, about 4 feet above the ground. The ground temperatures are obtained with a verified standard thermometer, the bulb of which rests on the ground at the bottom of a wooden tube, 3 feet below the surface, the arrangement being similar to that known as Lamont's. The place of exposure is a grassy surface, (the grass being short and in the dry weather thin), freely exposed to sunshine and rain:—

	Temperature.				Cloud proportion.		Rainfall: inches.		Rainy days.	
	Air.		Ground.							
	1879.	1880.	1879.	1880.	1879.	1880.	1879.	1880.	1879.	1880.
January, ..	65·0	65·8	72·4	72·6	0·39	2·03	*Nil*	0·05	...	1
February, ...	71·7	69·9	74·5	74·7	1·74	3·05	0·21	2·91	1	6
March, ...	79·1	78·6	79·8	78·3	0·79	2·72	*Nil*	0·54	...	2
April, ...	85·2	84·2	86·3	84·1	2·43	2·64	*Nil*	1·91	...	6
May, ...	85·2	83·6	90·2	85·5	4·59	5·21	3·22	4·87	9	12
Mean or Sum	77·2	76·4	80·6	79·0	1·99	3·13	3·43	10·28	10	27
Difference, ...	...	—0·8	...	—1·6	...	+ 1·14	...	+ 6·85	...	+ 17

Hence, it appears that, in the month of January, an excess of 1·64 of cloud, with an insignificant rainfall, accompanied an increase of 0·8° of air temperature. But in February, an increase of only 1·31 of cloud and of 2·70 inches of rain lowered the mean temperature 1·3°. In March, an increase of 1·93 of cloud and of 0·54 inch of rain, on only two days, coincided with a reduction of 0·5°. In April, an increase of only 0·21 of cloud and 1·91 inches of rain, on six days, a reduction of 1·0°; and, in May, an increase of 0·62 of cloud and 1·65 inches of rain, on three additional days, a reduction of 1·6° of temperature. But the temperature of the ground, in which the cooling effects of cloud and rain, (the latter especially,) are cumulative, exhibits their influence in a far more striking manner. As the result of the differences of the five months, the ground temperature of May 1880 was not less than 4·7° below that of the corresponding month of 1879.

That the effect of the cloud and rainfall on the temperature of the air was so much smaller than on that of the ground, is doubtless owing to the fact that, after January, the winds of Calcutta are chiefly from the sea. This too perhaps explains the very striking fact, that on the average of two complete years' observations, the temperature of the ground, at a depth of 3 feet, is not less than 5° higher than that of the air:

Such being the effect of cloud and rain, at a station situated only 60 miles from the sea, and but 20 miles from the broad estuary of the Hooghly, up which much of the sea wind blows to Calcutta, it may be expected that, in the continental climate of Upper India, this influence will be far more pronounced. That such is, in fact, the case, is strikingly shown by a comparison of the temperature, cloud and rainfall of the North-West Provinces in the dry and rainy seasons of 1877 and 1879 respectively. In the former year, the months of March, April and May were unusually cloudy, and the rainfall, although not excessive, was, on the whole, above the average. In 1879, these months were unusually dry and serene. On the other hand, the conditions of the rainy months, June, July, and August of the two years, were relatively reversed; the rainfall of 1877 being very deficient, while that of 1879 was more copious than usual. The result of these variations on the temperature is well shown in the following table, which gives the mean temperature anomaly, the mean cloud proportion, monthly rainfall and number of rainy days deduced from the abstract registers of the five stations, Meerut, Agra, Lucknow, Allahabad, and Benares :—

	TEMPERATURE ANOMALY.		CLOUD PROPORTION.		RAINFALL: INCHES.		RAINY DAYS.	
	1877.	1879.	1877.	1879.	1877.	1879.	1877.	1879.
March, ...	—1·4	+0·9	3·85	2·47	0·58	0·18	2·0	1·4
April, ...	—4·0	+3·7	3·22	1·03	0·52	0·07	1·6	0·4
May, ...	—1·3	+4·7	2·63	1·38	0·43	0·02	1·6	0·6
Mean, ...	—2·2	+3·1	3·23	1·63	0·51	0·09	1·7	0·8
Difference, ...	...	+5·3	...	—1·60	...	—0·42	...	—0·9
June, ...	+1·8	—0·8	3·26	4·66	1·40	4·78	3·0	9·2
July, ...	+4·3	—2·0	5·48	7·91	3·00	11·61	6·0	16·2
August, ...	+6·8	—2·0	4·41	8·07	3·21	11·14	4·8	22·6
Mean, ...	+4·3	—1·6	4·38	6·88	2·54	9·18	4·6	16·0
Difference, ...	...	—5·9	...	+2·50	...	+6·64	...	+11·4

It must not be overlooked that, both in the dry season and in such an autumnal season as that of 1877, cloudless weather is accompanied by hot westerly winds, while cloudy weather is usually characterised by comparatively cool easterly winds; and it may therefore be objected, that a large part of the temperature difference shown in the above table, is dependent on the wind and not on the local effect of cloud and rain. And this objection may be admitted, in so far, that the temperature effect is not strictly of local origin. But the heat of the westerly wind, itself, is simply owing to the dryness of the adjacent tract. For the heaviest rain that falls in the North-West Provinces in July and August is brought by westerly winds, which come from the Arabian Sea. These blow across Rajputana and Central India, the surface of which has then been cooled by the rain already fallen; and under these circumstances westerly winds are cool winds. The supposed objection, therefore, has no real validity.

The above data show that, both in the dry season and the rainy season, the anomalous temperature of the air depends principally on the cloud and rainfall; the effect of both these being to lower the temperature; in the case of the former, by obscuring the sun, in that of the latter, by the evaporation which ensues, and which reduces the temperature of both the ground and the air in contact with it, not only on the days of rainfall, but generally for one or two days afterwards. In November and December, however, when the temperature is falling rapidly, the influence of these agents is relatively less powerful, and the final result is of a different character. In these months, the total loss of heat by radiation from the ground, under a clear sky, exceeds the total gain from solar radiation under similar conditions; and, accordingly, the presence of cloud, which tends to arrest both, results in maintaining the temperature above the average. The winds, which bring the vapour to form the cloud, also contribute to maintain a high temperature; since they come from the seas around India, the temperature of which, at this season, is higher than that of the land. It is true that, in the cold season, as in the hot dry season, a warm period due to southerly winds and cloud, if rain falls, is almost always followed by a few days of excessive cold, as in the dry season; but, on the whole, the former effect is preponderant; and in November and December accordingly, the rule which holds good for the greater part of the year is reversed, cloudy and rainy months having a positive, and clear dry months a negative, temperature variation. This is well shown by the following table, which gives the mean temperature anomaly, cloud proportion, rainfall and number of rainy days of the six Punjab stations, Dera Ismail Khan, Rawalpindi, Sialkot, Lahore, Ludhiana, and Delhi, for November and December, in each of the five years 1875-79:—

Months.	1875. Temperature anomaly.	1875. Cloud proportion.	1875. Rain : inches.	1875. Rainy days.	1876. Temperature anomaly.	1876. Cloud proportion.	1876. Rain : inches.	1876. Rainy days.	1877. Temperature anomaly.	1877. Cloud proportion.	1877. Rain : inches.	1877. Rainy days.	1878. Temperature anomaly.	1878. Cloud proportion.	1878. Rain : inches.	1878. Rainy days.	1879. Temperature anomaly.	1879. Cloud proportion.	1879. Rain : inches.	1879. Rainy days.
November,	+1·0	2·29	0·15	0·8	+0·2	2·19	0·45	0·8	+4·0	3·64	2·08	2·7	—0·6	0·22	...	...	—2·5	0·61	...	...
December,	+2·1	2·51	1·03	2·2	+1·0	2·23	0·05	0·2	+0·7	5·27	3·90	4·7	—0·5	0·94	0·10	0·5	—1·0	1·80	0·70	1·8

Hence, it appears that, the months of November and December have a temperature above the average in cloudy years, below it in clear and serene seasons. It is hardly to be expected that the anomalies of temperature and cloud should show a more definite numerical relation than is exhibited in the table, since the actions concerned are somewhat complicated; and while the influences of cloud and of the wind on which the cloudiness depends, are such as tend to raise the temperature, the evaporation of rain, as already pointed out, tends to lower it. That the preponderating agency is that of nocturnal radiation, receives confirmation from the figures in the following table, which is based on the register of the same six stations in the Punjab. This shows, together with the temperature anomaly of the months in question, the anomaly of the nocturnal depression of the thermometer for terrestrial radiation, and also that of the solar thermometric excess. The signs *plus* and *minus* indicate the magnitude of the effect in each case, *i. e.*, the variations of these temperature differences, as compared with the corresponding respective averages. A + sign indicates a greater nocturnal depression (below the air temperature) than the average, or a greater excess of the solar thermometer (above the air temperature) and *vice versâ*. The comparison is restricted to the last three years, for which alone we have comparable observations of the nocturnal radiation.

MONTHS.	1877.			1878.			1879.		
	Air temperature anomaly.	Nocturnal depression anomaly.	Solar excess anomaly.	Air temperature anomaly.	Nocturnal depression anomaly.	Solar excess anomaly.	Air temperature anomaly.	Nocturnal depression anomaly.	Solar excess anomaly.
November, ...	+4·0	—1·6	—2·5	—0·6	+1·0	—0·7	—2·5	+0·7	+1·7
December, ...	+0·7	—1·7	—3·6	—0·5	+1·0	+1·4	—1·0	+0·8	+0·2

In every case, the air temperature anomaly has the opposite sign to that of the nocturnal depression, indicating that, when the loss of heat by nocturnal radiation is less than usual, the mean air temperature of the month (not of the night only) is above the average; and that when the nocturnal radiation is greater than usual, the mean air temperature is below the average; and this action is sufficient to outweigh the varying intensity of solar radiation.

It is only in the months of November and December, that the air temperature shows, distinctly, the predominant influence of nocturnal radiation, as affected by cloud. In October, solar radiation on the one hand, and evaporation on the other, seem to be more effectual in influencing the air temperature than the variations of nocturnal radiation; and thus, an excess of cloud is more frequently accompanied with a negative than a positive anomaly of air temperature. In January, the two kinds of action are more nearly balanced. This conclusion is illustrated in the following table, which exhibits the mean results of the six Punjab stations above enumerated in the five years 1875-79.

Months.	1875.				1876.				1877.				1878.				1879.			
	Temperature anomaly.	Cloud proportion.	Rain in inches.	Rainy days.	Temperature anomaly.	Cloud proportion.	Rain in inches.	Rainy days.	Temperature anomaly.	Cloud proportion.	Rain in inches.	Rainy days.	Temperature anomaly.	Cloud proportion.	Rain in inches.	Rainy days.	Temperature anomaly.	Cloud proportion.	Rain in inches.	Rainy days.
January, ..	—0·2	2·71	0·09	0·7	+0·7	3·21	0·68	1·3	+0·9	5·55	2·54	4·3	—0·8	3·34	0·62	1·3	+2·2	2·12	0·10	0·2
October, ..	—2·8	0·63	0·83	1·5	—1·8	2·08	1·13	2·8	—0·3	2·71	1·88	2·7	+2·6	0·47	0·13	0·2	+0·6	0·42	0·13	0·2

In any discussion of the causes which affect the temperature and modify the temperature anomaly of any given month or other short period, there is one important circumstance which must not be overlooked, although it is rarely referred to in the discussion of such questions. This is the temperature of the ground. It seems to be established by the observations of ground temperature, which have been made at Calcutta during the last two years, that the ground, to a considerable depth, serves as a reservoir of heat, the slow emission of which probably exercises an appreciable influence on the temperature of the lowest air stratum; and this will be more especially the case in a region such as the Punjab, where (in the cold season more particularly) the air has but little movement of translation. This effect becomes apparent, when two or three months, in succession, are characterised by abnormal dryness or its opposite, by the gradual exaggeration of the temperature anomaly, whether positive or negative, in the successive months. Of this phenomenon, examples have been given in the table on a previous page, more especially in the case of June, July, and August 1877, and March, April, and May 1879, in the North-Western Provinces; and many others may be noticed, in glancing through the tables of temperature anomalies in the annual meteorological reports. On the other hand, to the same modifying influence, may probably be traced in a large measure, the fact that homonymous months may be very similarly characterised by unusual dryness or dampness in two different years, and yet there may be a considerable difference in the temperature anomaly,. if the period of a month or two immediately preceding has been of a different character in the two years compared. An instance of the kind has occurred during the present year (1880), which will be duly noticed in the annual report for that year.

To sum up the principal conclusions arrived at in the foregoing discussion. At all times of the year, the air temperature is dependent, 1st, on the quantity and intensity of the sunshine; 2nd, on the terrestrial radiation, which is predominantly active as a cooling action only at night; and 3rd, on the evaporation of rain. The influence of cloud, which checks both solar and terrestrial radiation, is such as, in conjunction with the rainfall, (which varies more or less *pari passu* with it), to lower the temperature from February to October, to raise it in November and December. On the mean of the whole year, therefore, cloud and rain exercise a preponderating cooling influence. The immediate effect of these agencies is, however, much modified by the condition of the ground, which acts as a reservoir of heat, and thus renders the temperature of any moderate period, to a certain extent, dependent on the condition of the period preceding it.

In general, and with but few and temporary exceptions, the pressure of the whole of India, was, throughout the year 1879, as persistently below the average, as it had been above it during the two years ending with August 1878; the depression, which set in in September 1878, having been almost continuous up to, at least, the end of 1879. As in the case of the preceding and opposite anomaly, this condition was evidently not due to the reduced density of the lower atmosphere, except partially in the months of April and May. For, the density of the lowest stratum, and therefore its static pressure, was above the average in March, and, in most cases, from June to the end of the year; on the mean of the whole year, the pressure of this stratum was in excess; as might have been expected from the fact, that its mean temperature was below the average; but this excess was more than neutralised by the deficiency of pressure of the higher strata, and the total pressure was in defect in all months, excepting July and partially in March, June, September, and November. Thus, then, we have, in 1879, conditions precisely the reverse of those obtaining in 1877 and the earlier part of 1878, when the temperature of the lower stratum being excessive, was accompanied by a density less than the average; but this anomaly was neutralised and outbalanced by the excessive pressure of the elevated strata.

Is this contrast of conditions in the lower and higher atmospheric strata, thus doubly illustrated in the barometric features of the last three or four years, a law of general incidence? and is it traceable to the play of physical processes which accompany these abnormal conditions? There are many circumstances which lead me to think this probable.

I must premise that the opposition of conditions, the coincidence of a decrease in the density of the higher with an increase in that of the lower strata of the atmosphere, and *vice versâ*, so far from being an extraordinary feature of our atmosphere, is one of regular annual occurrence in India. In Central India, May, in the North-Western Provinces either May or June, (according as the rains begin early or late), is the hottest month in the year. The first fall of rain brings about a rapid fall of temperature and with it a corresponding increase in the density of the lower air stratum; but notwithstanding this increase of density, there is no corresponding increase in the total pressure of the atmosphere. On the contrary, the minimum pressure does not occur until some weeks later; and, at the hill-stations, from 4,500 to 7,000 feet, above the plains, the pressure of the atmosphere continues falling till July. Hence, it must be concluded that the setting-in of the rains is accompanied by a decrease in the static pressure of the higher strata, which compensates, or more than compensates, the increased density of the lower. The following data serve to illustrate this:—

	HOSHANGABAD AND PACHMARHI.			ROORKEE AND CHAKRATA.		
	May.	June.	July.	May.	June.	July.
Temperature of lower station,	92·7°	88·1°	79·5°	87·7°	90·2°	84·6°
Pressure of lower station, ...	28·675″	28·584″	28·592″	28·754″	28·615″	28·617″
Barometric weight of intervening air stratum, ...	2·340″	2·332″	2·367″	5·545″	5·462″	5·499″
Pressure of upper station, ...	26·335″	26·252″	26·225″	23·209″	23·153″	23·118″

On the other hand, the months in which the temperature is lowest on the plains, and the lowest stratum of air, on the average, most dense, are December and January; but at the level of the Himalayan hill-stations Murree, Chakrata, Darjeeling, &c., the pressure in December is lower than, in November, and in January still lower; and at that of Leh it falls from October to February, in which month, according to our present data, occurs the absolute minimum pressure of the year. These facts seem to point to the conclusion that, at some greater elevation, (perhaps at that of the Karakoram plateau), the annual oscillation of pressure is probably approximately the reverse of that which takes place on the plains of India, the maximum occurring when, in the lower atmosphere, the summer monsoon is at its height; and the minimum in January or February.

In seeking the physical explanation of these changes, it may be postulated at the outset, that the variations in the density of the atmosphere with which we have to deal, whether those of the higher or lower strata, are mainly due to variations of mean temperature; to which, indeed, the influence of variations in the quantity of vapour constituent, (regarded as replacing dry air of the same tension), is of quite subordinate importance. I have shown elsewhere, that the reduction of barometric weight, which a column of air, 7,000 feet high, undergoes from January to July, over the plains of Bengal, is due to the rise of temperature in the proportion of $\frac{11}{13}$, to only $\frac{2}{13}$, consequent on the replacement of dry air by vapour; and the relative importance of temperature may be shown more in detail and with more direct reference to the present discussion, by the following comparison of the temperature and barometric anomalies, extracted from Tables XI and VIII in the Report on the Meteorology of 1879.

	CHAKRATA AND ROORKEE.		RANIKHET AND BAREILLY.		PACHMARHI AND HOSHANGABAD.	
	Barometric anomaly.	Mean temperature anomaly.	Barometric anomaly.	Mean temperature anomaly.	Barometric anomaly.	Mean temperature anomaly.
January	—·007	+2·0	—·010	+2·7	—·002	+0·3
February	—·019	+1·3	—·014	+1·5	+·041	+0·9
March	+·011	—0·4	+·007	—0·4	+·014	—1·7
April	—·035	+3·6	—·038	+3·5	—·021	+0·8
May	—·044	+4·3	—·048	+5·4	—·015	+0·7
June	+·055	—2·6	+·046	—1·6	+·014	—1·8
July	+·042	—1·5	+·044	—1·9	+·001	+0·4
August	+·031	—2·0	+·030	—1·6	+·014	—1·3
September	+·024	...	+·017	—0·1	+·021	—1·1
October	+·009	...	+·002	—0·4	+·009	—1·6
November	+·067	—2·5	+·037	—2·7	+·034	—4·9
December	+·028	—1·3	+·015	—2·4	+·024	—5·1

Considering the character of the data, that they can be regarded, at best, as affording rough approximations to the mean condition of the atmospheric stratum dealt with, as regards both density and temperature, and that variations of superincumbent pressure and humidity are entirely left out of account, the opposite march of temperature and density, exhibited by this table, is sufficiently striking, and affords a very satisfactory confirmation of the fundamental postulate. With respect to the higher atmospheric strata, direct evidence is of course wanting; but it may fairly be inferred that the variations of temperature therein, are at least as influential, relatively, on the density, as in the lower atmosphere here dealt with.

If these views be admitted, the frequent concurrence of a diminished density in the lower strata with an increased density of the higher, and *vice versâ*, resolves itself into this, that the temperature of the higher and lower strata tend to vary at opposite directions, the one being in excess when the other is in defect; and the discussion of the problem resolves itself into that of the processes by which the temperatures of the lower and higher strata are respectively influenced.

The conditions which principally affect variations of temperature on the land, (in India) have already been discussed. It has been shown that the most influential of these are the presence or absence of cloud and the evaporation of rainfall. That, excepting in one or two of the winter months, an increase of cloud is accompanied by a reduction of temperature, and, at all seasons, without exception, the evaporation of rain produces a similar effect. But the effect of cloud and the precipitation of rain, on the temperature of the higher atmospheric strata, must be of precisely the opposite character. In the first place, the very condensation of the vapour which forms them, sets free a quantity of latent heat, which retards the fall of temperature, that would otherwise take place in every ascending current; and such currents exist in the large majority of rain clouds, if not in all; and, secondly, the solar radiation, which the cloud stratum shuts off from the earth, must be partly absorbed in the evaporation of the cloud surface.

Hence, there seems to be much probability, that the temperature anomalies of the higher strata of the atmosphere, as a general rule, are of the opposite character to those shown by our land observatories at low levels; but if so, the elevation at which this law holds good, must be considerably greater than that at which the hill observatories of the Himalaya afford the means of verifying it.

~~~

VII.—*Description of a rain-gauge with evapometer, for remote and secluded stations.* By H. F. Blanford, F. R. S., *Meteorological Reporter to the Government of India.*

(With Plate XV.)

[Received 25th March 1881. Read 6th April 1881.]

In the autumn of 1879, I received, through the Government of India, a description and sketch of a rain-gauge proposed by Mr. Hutchins, Assistant Conservator of Forests in Mysore, for the purpose of collecting the rainfall at remote and rarely visited stations, such as in certain forest tracts, and other places, where there are no permanent residents, and which can be visited only at longer or shorter intervals. There are, it is true, several forms of rain-gauge provided with mechanism for the purpose of registering the fall, but these are expensive at the outset, and if, as frequently happens, the mechanism becomes deranged, the gauge must as a rule be sent to a Presidency town or some large Government workshop for repair; involving further expense and an interruption of the record, at a time, perhaps, when it is most inconvenient.

Mr. Hutchins' idea was to provide a gauge of sufficient capacity to hold the rainfall of a month or even longer period, which might be measured on periodical visits to the station; and since, under such circumstances, there must always (except in prolonged wet weather) be an appreciable loss by evaporation, he proposed to use an evapometer with the gauge, which should show the evaporation in the intervals of the measurement; which quantity, being added to the rainfall collected and measured, would give the total fall in the interval.
~~~

The instrument proposed by Mr. Hutchins consisted of two cylindrical vessels of equal size, *viz.*, 8 inches diameter, one three times as deep as the other,* which were to be buried side by side in the ground. The deeper which was to receive the rain, was surmounted by a funnel of the usual character, also 8 inches in diameter; having a small hole at the bottom, through which the rain should run into the receiver. The other, which was to serve as an evapometer, was closed by a conical cover with a small hole at the apex; and over this was supported a second conical cover of the same diameter, leaving an interspace of about 1 inch, through which the vapour might diffuse and escape around the edges. Both were to be padlocked, to prevent any vitiation of the results, by unlicensed interference, on the part of any too curious enquirer.

Before having the instrument constructed, I slightly altered the design, by reducing the size of the outer or protecting conical cover of the evapometer, and surrounding both the receiving cylinders with a second outer cylinder, in order to protect the upper part of the receiver more effectually against direct heating by the sun. The instrument, thus modified, is represented in the accompanying figure; it was made at the Mathematical Instrument department and in March 1880 was set up at the Alipore observatory; (buried in the ground, in the immediate neighbourhood of the 5 inch Symons gauge, which serves for the daily measurement of the rainfall.

At the beginning, 4 inches of water, as measured in the measure-glass, for the 8-inch gauge, was placed in the evapometer, and an equal quantity in the receiver of the gauge, (in order to provide for evaporation in anticipation of rain). At the end of a month, the water in both cylinders was measured; and the difference taken as representing the rainfall of the period. Four inches of water was then replaced in each cylinder, and the instruments were closed and left untouched for another month.

Thus the rainfall collected in the new gauge was measured once a month only, while that in the smaller Symon's gauge was measured daily; and as this comparison was carried on throughout the rains and the subsequent fine and cold season, the new form of gauge has been fairly tested. The results are given in the following table; the rain of both gauges having been carefully measured, and the accuracy of the measuring-glasses verified by weighment of their contents. The small corrections, resulting from the verifications, have been applied to the figures in the table.

---

* In the drawing sent one was 20 inches the other about 7 inches in height.

Comparative table of the rainfall at Alipore observatory, as measured daily in a 5-inch gauge, and monthly in an 8-inch gauge with evapometer.

Month.	Actual Measurement, Monthly.			Corrected difference—rainfall.	Total of daily measurement.	Error of monthly measurement.
	Evapometer.	Gauge.	Difference.			
	Inches.	Inches.	Inches.	Inches.	Inches	Inches.
April	3·08	5·91	2·83	2·88	2·01	+0·87
May	3·37	8·90	5·53	5·63	4·88	+0·75
June	3·68	18·70	15·02	15·31	14·78	+0·53
July	3·58	17·03	13·45	13·71	13·46	+0·25
August	3·74	17·18	13·44	13·70	13·33	+0·37
September	3·63	16·95	13·32	13·57	13·17	+0·40
October	3·70	8·97	5·27	5·37	5·11	+0·26
November	3·62	3·96	0·34	0·35	0·02	+0·33
December	3·61	4·05	0·44	0·45	0·15	+0·30
January	3·64	3·90	0·26	0·26	...	+0·26
Total......	...	...	...	71·23	66·91	+4·32

The quantity shown by the new gauge is therefore constantly in excess; and there can be little doubt that this is owing to the evaporation from the evapometer being greater them from the gauge. Nevertheless for a rough measurement of the rainfall, in the rainy season, the instrument may serve fairly enough; and I think that one or two slight alterations may very much improve its working.

It is not difficult to decrease the evaporation in the evapometer by increasing the size of the outer cone, and a few trials will show what dimensions give the best result.

* * *

VIII.—*On some Lepidopterous Insects belonging to the Rhopalocerous Genera* Euripus *and* Penthema *from India and Burmah.*—*By* J. Wood-Mason, *Deputy Superintendent, Indian Museum, Calcutta.*

[Received 5th February;—Read 6th April, 1881.]

(With Plates III & IV.)

1. Euripus consimilis. Pl. IV, Fig. 3.

Diadema (*Hestina*) *consimilis*, Westwood, Gen. Diurn. Lep., vol. ii, p. 281, note, ♀.

A fine specimen of the female of this striking species taken in the autumn of the past year in the Thoungyeen forests, British Burmah, by

Captain C. T. Bingham has been courteously lent to me by my friend Captain G. F. L. Marshall for figuring along with its South-Indian representative.

2. EURIPUS CONSIMILIS, var. MERIDIONALIS. Pl. IV, Fig. 2.

♀. Differs from the preceding in having the markings of the upper side in all the wings straw-coloured instead of pure and dazzling white; the basal two-thirds of the long streak in the interno-median space, as also the streak in the sutural area, of the anterior wings obsolete, and the submarginal short streaks at the apex of the same wings as prominent as those which succeed them; and all the venation of the posterior wings much more broadly dark-bordered, with the black patch referred to in the original description of *E. consimilis* consequently much less defined.

All the wings are bright carmine at their insertion on the under side just as in typical *E. consimilis.*

HAB. Trevandrum, Travancore, South India.

Specimens of the following species were received in the same collection with the preceding:—*Danais grammica*, Boisd. (= *D. ceylonica*, Felder); *Euplœa core*, Cramer, *E. ? montana*, Felder; *Mycalesis anaxias*, Hewitson, *M. junonia*, Butler; *Melanitis tristis ?* Felder, *M. leda*, Linn.; *Parantirrhœa Marshalli*, gen. et sp. nov., W.-M.; *Zipoetes*[*] *saitis*, Hew.; *Elymnias caudata*, Butler; *Discophora lepida*, Moore; *Cirrhochroa lanka*, Moore; *Cynthia erota*, Fabr.; *Messaras erymanthis*, Drury, var. without spots on the apical black of the anterior wings; *Neptis varmona*, Moore; *Abisara prunosa*, Moore; *Lycaena ethion*, Doubld. and Hew., *L. decidea*, Hew.; *Scolitantides nyseus*, Guér.; *Myrina atymnus*, Cr.; *Pieris remba*, Moore; *Tachyris paulina*, Cr.; *Eronia valeria*, var. *pingasa*, two fine females; *Hebomoia glaucippe*, Linn.; *Papilio eurypylus*, Linn., *P. antiphates*, Cr., *P. aristolochiae*, Fabr., *P. jophon*, Gray, *P. dravidarum*, W.-M.. a fine series of males, *P. polymnestor*, Cr., and *Ornithoptera pompeus*, var, *minos*, Cr.

3. PENTHEMA LISARDA. Pl. III, Fig. 1.

Numerous specimens of both sexes of this well-known species are in the Museum from the Sikkim Hills, the Naga Hills, and the southern slopes of the Khasi Hills (Sylhet).

The setose clothing at the base of the posterior wings between the median and submedian veins is scanty and cretaceous-white like the markings.

The specimen figured is a male.

---

[*] '*Ziboetes*' or '*Zipœtes*' (Ζιβοίτης vel Ζιποίτης), not '*Zipaetis*', nor '*Zipœtis*'.

4. PENTHEMA DARLISA. Pl. III, Fig. 2.

P. darlisa, Moore, Proc. Zool. Soc. Lond. 1878, p. 829, ♂ ♀.

Both sexes of this distinct species were described by Mr. Moore from specimens in my collection obtained in April at Meetan in Upper Tenasserim at an elevation of 3,000 feet.

Two specimens of the male out of many captured in March last by Captain Bingham in the Thoungyeen forests have been presented to the Museum by Captain Marshall.

This species also differs from *P. lisarda* in its broader wings, a character not mentioned by Moore in his description of the species.

The scanty setose clothing of the base of the posterior wings is fuscous.

5. PENTHEMA BINGHAMI, n. sp., Pl. IV, Fig. 1.

♂. Differs from *P. darlisa* in having fully the basal half (including the same extent of the abdomial area in the posterior wings) of all the wings devoid of markings, the submarginal and discal series of spots alone remaining in both pairs; these two series of spots are bluish-white in the anterior wings and of a beautiful straw-yellow in the posterior wings; they are, in fact, of the same colour, size, and shape as in *P. darlisa;* but *the inner of the latter two series is closer to the outer*, which is placed at the same distance from the external margin of the wings. The wings are all also somewhat narrower than in *P. darlisa*, thus approaching those of the typical species; and the posterior pair are furnished on the basal half, between the median and submedian veins and in the discoidal cell, with a thick and conspicuous furry clothing of rich dark fuscous setae exactly matching the dark ground-colour of the wings and the abdomen of the insect in shade, which setose clothing is so scantily developed as to be quite inconspicuous in both the previously described species. The whole body, too, but especially the abdomen, is much darker-coloured than in either of them. Shadowy traces of the lost spots are faintly discernible on the anterior wings.

HAB. The Thoungyeen forests, British Burmah, where a single specimen was obtained in March last by Captain Bingham, after whom, at Captain Marshall's suggestion, I have much pleasure in naming it.

EXPLANATION OF THE PLATES.

Plate III.

Fig. 1. *Penthema lisarda*, Doubleday, ♂.
Fig. 2. *Penthema darlisa*, Moore, ♂.

Plate IV.

Fig. 1. *Penthema Binghami*, n. sp., ♂.
Fig. 2. *Euripus consimilis*, var. *meridionalis*, ♀.
Fig. 3. *Euripus consimilis*, Westword, ♀.

IX.—*On the Voles* (Arvicola) *of the Himalayas, Tibet, and Afghanistan.* —*By* W. T. BLANFORD, F. R. S., &c.

[Received 6th May 1881; Read 1st June 1881.]

(With Plates I and II.)

Within the last few years several species of *Arvicola* have been described from the Himalayas and from the country north of the range; and quite recently two additional forms have been procured from the same region, and two others have been found in the collection of the East-India Museum—one from the Himalayas, the other from Afghanistan. I propose in the present paper to give an account of all the Himalayan, Tibetan, and Afghan Voles hitherto described, so far as I am acquainted with them. I also propose to describe and figure the molar dentition of all available forms. I may add that I have had the advantage of examining the original specimens of all the species described.

There is much reason to doubt whether any kind of *Arvicola* has hitherto been described within the limits of the Oriental Region proper*, the forms occurring on the Himalayas being found at an elevation where there is either an intermingling of Oriental and Palæarctic types, or where the latter prevail—the rodents, undoubtedly obtained from the plains of India, that have been referred to the genus *Arvicola* being really true Murinæ, without the peculiar dental organization of the Voles. Such is especially the case with *Arvicola bengalensis* and *A. indica* of Gray and Hardwicke's 'Illustrations of Indian Zoology,' both of these forms having been shown to belong to the Murine genus or subgenus *Nesokia*†.

The earliest description of a Himalayan *Arvicola*, so far as I am aware, was that of *A. roylei*, by Dr. Gray‡, 1842. The same animal was mentioned at p. lxviii of the " Memoir on the Mammalogy of the Himalayas," by W. Ogilby, published as an appendix in Royle's 'Illustrations of the Botany &c. of the Himalayas,' and the dried skin was said to be undistinguishable from that of *A. arvalis.* In the same memoir, on the preceding page (lxvii), another short-tailed rodent is said to have been observed by Hodgson and Herbert, and supposed to be a Lemming. The animals noticed were doubtless *Arvicolæ*, no Lemming having ever been found as yet in the Himalayan area. The original specimen of *A. roylei* has been preserved in the British Museum, and was originally procured by Royle, it is said from Kashmir.

---

* In Blyth's 'Catalogue of the Mammalia in the Museum of the Asiatic Society,' Calcutta, a stuffed skin of *Arvicola roylei* is included, and said to have been obtained from Pind Dádun Khán, in the Punjab. This specimen was presented by Mr. Theobald in 1853, according to the catalogue; but it is remarkable that no reference is given, and that the species is not mentioned in either of the two lists of specimens from Pind Dádun Khán and other places presented to the Society's Museum by Mr. Theobald in 1853 (J. A. S. B. 1853, xxii. pp. 410, 580). The specimen could not be found lately, when a search was made for it at my request. I have no hesitation in considering that either the identification or the locality is open to grave question, and in rejecting the evidence as for the present in need of confirmation.

† Blyth. J. A. S. B. 1863, xxxii. p. 328; Anderson, J. A. S. B. 1878, xlvii. pt. 2, pp. 214, 221, 227.

‡ For references see synonymy of species.

The next notice in order of date was by Mr. Hodgson, who, in 1849, recorded the occurrence of an Arvicoline animal in Sikkim. For this form, which he considered the type of a new genus, he proposed the name *Neodon sikimensis.* As will be shown presently, the genus cannot be maintained as distinct from *Arvicola*, although it forms a well-marked section, distinguished by its dentition. In 1863 Mr. Blyth proposed a third genus *Phaiomys*, for a species, which he named *Ph. leucurus*, brought by Mr. Theobald from the banks of the Tsomoriri, in Western Tibet. The reasons assigned for the establishment of the genus, namely, that the Tibetan form is more robust and has a well-developed thumb and nail to the fore foot, appear to have been suggested by comparison of an abnormally large individual with but one or two species of *Arvicola*, since many Voles are equally robust, and numerous species possess a well-marked thumb furnished with a nail*. The specific name also, having been preoccupied, has been changed to *A. blythi.*

The three species thus described were all enumerated in Blyth's 'Catalogue of the Mammalia in the Museum Asiatic Society,' published in 1863, and two of them were described in Jerdon's 'Mammals of India.' The third species, *Phaiomys leucurus*, was noticed only, not described, as the trans-Himalayan region was not comprised in the countries the animals of which were included by Jerdon in his fauna. No further addition was made to the number of Arvicoline animals from the Himalayas for some years, until, in 1872, A. Milne-Edwards described a new species, *A. melanogaster*, brought by Pére David from the eastern portion of the Himalayan tract. Another form was procured by Dr. Stoliczka on his last journey, when attached to Sir D. Forsyth's mission to Eastern Turkestan. This Vole was described by myself, in 1875, as *A. stoliczkanus.* In 1878 I received from my friend Mr. A. B. Wynne, of the Geological Survey of India, a skin and skull of an *Arvicola* obtained by him at Mari or Murree, in the hills north of the Punjab. On comparing this specimen with the description of *Arvicola roylei*, I found considerable similarity but there appeared to be a difference in the characters of the posterior upper molar teeth. This distinction alone, however, I thought insufficient without further comparison; and I therefore waited until I returned to England last year, when I compared the Murree animal (of which, in the meantime, Mr. Wynne had procured for me additional specimens) with the type of *A. roylei*, and ascertained that the two were distinct. At the same time Mr. Thomas found an example of another species from Kumaon in the specimens of the East-India Company's Museum, which had just been made over to the British Museum; and Dr. Scully brought several skins and spirit-specimens of yet another form from Gilgit. All these forms appeared to be undescribed. One more skin in the East-India Company's collection, procured by Griffith in Afghanistan, and hitherto supposed to be an imperfect specimen of *Mus mettada*, proved, on the skull being extracted, to be an *Arvicola.* There does not seem to be any definite character by which, judging from dried skins, this form can be distinguished from the Mongolian *A. mandarinus;* and although it is by no means improbable that fresh specimens may show the existence of specific distinction, it does not appear advisable to propose a new name for the Afghan specimen on the evidence of a single dried skin.

---

* See 'Scientific Results of the Second Yarkand Mission,' Mammalia, pp. 39—43. There are three serious misprints on p. 39. The first, 15 lines from the bottom, consists of the omission of the words "of the thumb" after "ungual phalanx." The second is in the measurements: "Do. of fore foot and claws" should be "Length of fore foot" &c.; as it stands it appears to be the breadth. The third is the worst of all: I wished to point out that if the genus *Phaiomys* be retained, the correct spelling is *Phæomys.* The printer has made nonsense of this by putting *Phaiomys* in both instances.

All of these Voles are fairly distinguishable by their dentition, and all when placed together, can be recognized by slight differences of coloration, and frequently by the relative proportions of the ears, feet, toes, or tail; but in descriptions it is very difficult to explain small distinctions of colour due to different shades of brown more or less mixed with grey, black, red, or yellow.

As is well known, the genus *Arvicola* is distributed throughout nearly the whole of the Palæarctic and Nearctic Regions, and comprises many species. The classification of these forms has proved a by no means easy problem, and various plans have been proposed; the best known and simplest of these appears to be that of Blasius*, some form of which has been adopted by most modern writers. This system depends chiefly on the characters of the molar teeth, and especially on the number of prisms, triangles, or spaces on the crowns, and the number of external and internal salient angles on the sides of each tooth. In estimating the number of prisms or spaces (Schmelzschlingen), those on different sides of the tooth are counted separately, unless they are exactly opposite to each other; whilst in estimating the salient angles, all that form a distinct fold on the outside of the tooth are enumerated, although, when the teeth are but little worn, such angles are not conspicuous on the crown. As in most other systems of biological definition, it is impossible to obtain absolute uniformity, since it is often a question whether the spaces on the crown of the tooth enclosed by angles on opposite sides correspond or alternate, and, consequently, whether they are to be counted as two or as one. An instance is afforded by the lower molar teeth of *A. sikimensis* (see Plate I. fig. A). In the first tooth it is difficult to say whether the number of spaces or prisms should be counted as 7, 8, or 9, the latter number, however, would best agree with the general practice; but in the hindmost lower molar we might by this plan count 5 prisms, whereas, in accordance with the usual plan, the number is but 3. To avoid this difficulty some writers enter into details on the construction of the separate teeth*, but this makes the description rather long.

---

* München, Bull. Akad. 1853, col. 257; Münch. Gel. Anz. xxxvii. 1853, col. 105. Säugthiere Deutschlands, pp. 333—336 &c. The first sketch of the scheme was in Keyserling and Blasius 'Wirbelthiere Europa's (1840), p. 40.

In counting the external and internal angles also, it is difficult at times to say whether a mere convexity, that does not form a distinct angle, or a comparatively rudimentary fold, such as is frequently found in the anterior portion of the first lower molar, should be included or not; and there are sometimes individual variations within the limits of the same species. Good figures are the only safeguards against misunderstanding.

The European forms are thus divided by Blasius:—

I. *Molars furnished with roots in the adult animal.*

A. HYPUDÆUS, Illig.

First lower molar with 7 spaces, 4 outer and 5 inner angles; second lower molar with 3 divided spaces and 3 internal and external angles; second upper molar with 4 spaces, 3 outer and 2 inner angles. The interparietal bone throughout the whole breadth of its hinder margin raised in a flat convexity, a pointed projection in the middle of the bone in front, and a long gradually diminishing point on each side.

The European forms are *A. glareolus* and *A. rutilus.*

II. *Molars rootless.*

B. PALUDICOLA.

First lower molar with 7 spaces, 4 outer and 5 inner angles; second lower molar with 5 simple spaces and 3 internal and external angles; second upper molar with 4 spaces, 3 outer and 2 inner angles. Interparietal bone with the hinder edge raised in the middle, concave towards the sides, with a projecting point in the middle in front, obliquely truncated on the sides, and terminating in long points projecting outwards and backwards. Dorsal surface of body grey of various shades to brownish black.

---

* For instance, Coues and Allen, 'Monograph of North-American Rodentia,' *Muridæ*, genus *Arvicola.*

This comprises *A. amphibius*, *A. nivalis*, *A. ratticeps*, and *A. brandti*.

C. AGRICOLA.

First lower molar with 9 spaces, 5 outer and 6 inner angles; second upper molar with 5 spaces, and 3 angles both inside and outside; second lower molar with 5 spaces and 3 angles on each side. The interparietal elevated into a flat convexity along the whole width of the hinder margin, produced into an angle in front, and cut off almost at a right angle at the sides. The dorsal surface of the body dark blackish, brownish grey.

The only European form is *A. agrestis*.

D. ARVICOLA.

First lower molar with 9 spaces, 5 outer and 6 inner angles; second upper molar with 4 spaces, 3 outer and 2 inner angles; second lower molar with 5 simple spaces and 3 angles, both outside and inside. Interparietal convexly swollen throughout the whole breadth of the hinder margin, produced in front into a middle point, attenuate at the sides and sharply truncate, with a short oblique pointed projection directed outwards and backwards. Dorsal surface grey of various shades.

This, the typical form, is again divided into:—the Long-eared Voles, *Arvicola*—with 8 mammæ (4 on the breast, 4 on the groin), the planta with 6 distinctly separate roundish tubercles, the ear projecting beyond the fur, and the eye rather large; and the Short-eared Voles, *Microtus*—with only 4 mammæ, all on the groin, the planta with 4 tubercles, ears concealed by the fur, and eye very small. The first comprises the European *A. campestris* and *A. arvalis* and several Asiatic species, such as *A. socialis*, *A. saxatilis*, and *A. gregalis*; the second *A. subterraneus* and *A. savii*.

The American species have been similarly classified by Baird[*] and Coues[†]. The only European section said to be represented in America is the *Hypudæus* of Keyserling and Blasius[‡], for which, as it is not the original *Hypudæus* of Illiger[§], Coues has proposed the name *Evotomys*. It appears probable that this name must be adopted for the section of

---

[*] Mammals of North America, pp. 509–553 (1857).

[†] Monograph of North-American Rodentia, pp. 152 &c. (1877).

[‡] Wirbelthiere Europa's, p. 34.

[§] Prod. Syst. Mam. Av. p. 87.

Arvicolæ with rooted molars in the adult state. By both Baird and Coues *Evotomys* and *Hypudæus* are classed as a distinct genus. The true *Arvicolæ* of North America are divided into four subgenera. As none of these are Himalayan, it is unnecessary to specify them more fully. One of these sections (*Hemiotomys* of Baird, *Myonomes* of Coues), like the European *Agricola* and the Himalayan *Neodon*, has 3 salient angles on the inside of the second upper molar; but it has a 7-spaced first lower molar with but 4 outer and 5 inner angles, instead of a 9-spaced tooth with 5 outer and 6 inner angles.

We may now return to the Himalayan and Tibetan forms. None, so far as I know, have rooted molars. I have not been able to examine all the species; but as there are no roots to the molars of *A. sikimensis*, *A. wynnei*, *A. blythi*, *A. blanfordi*, or *A. stracheyi*, I think it improbable that the allied forms should exhibit so remarkable a character. All but two *A. sikimensis* and *A. melanogaster*, have the first lower molar, as in Blasius's section *Paludicola* (and as in *Hypudæus* or *Evotomys*), with 7 prismatic spaces, and normally with 4 outer and 5 inner angles, a fifth more or less rudimentary outer angle in front being present in some forms. The second lower and the second upper molar have also the same structure as the corresponding teeth in European forms of *Paludicola*—the circumstance that in some forms there are but 3 double spaces in the second lower molar instead of 5 simple prisms being, in fact, of no structural importance since the difference depends on whether the angles on opposite sides of the tooth correspond or alternate; and there is every possible gradation between one condition and the other. The Himalayan species, with 7-spaced anterior lower molars, however, are divided into two groups by the structure of the hinder upper molar. In *A. stoliczkanus*, *A. stracheyi*, *A. roylei*, *A. blanfordi*, and *A. wynnei* this tooth terminates in a narrow elongate lobe, produced backwards in the direction of the row of teeth, and posteriorly destitute of salient angles; whilst in *A. blythi* and in *A. mandarinus* (?) the last upper molar terminates, as in *A. amphibius* and its allies, in a crescent or transverse lobe, with a well-marked internal salient angle. The latter two species appear to belong to the European section *Paludicola;* for the former I venture to propose a new section, *Alticola*, of which *A. stoliczkanus* may be considered the type. In this form and in the nearly allied *A. stracheyi* the structure of the last tooth is so peculiar that they certainly deserve distinction. There are two small external angles anteriorly and two posteriorly, the two pairs being separated by a deep sinus, and there are but two interior angles, both, however, much stronger than those on the outer side of the tooth. These two typical forms of *Alticola*, moreover, are well distinguished from the others by the absence of any claw to the thumb. Of the other three forms *A. wynnei* is distinguished by having on the upper molar two well-marked external and two equally strong internal angles on the front part of the tooth, and a third rounded external angle on the posterior lobe; whilst in *A. roylei* and *A. blanfordi* there is a nearer approach to the structure of *A. stoliczkanus*, but there are three internal angles on the last upper molar.

A. sikimensis and *A. melanogaster* differ from the other Himalayan forms, firstly by having a longer first lower molar with, normally, 9 spaces, though there are fewer in *A. melanogaster*, owing to some of the angles on opposite sides corresponding; secondly, in both the first and second upper molars having an additional internal angle posteriorly. In the characters of the first lower and second upper molars, *A. sikimensis* agrees with the European *A. agrestis*, the type of the subgenus *Agricola* of Blasius, and the second upper molar is similar to that in the American subgenus *Myonomes* of Coues (type *A. riparius*), of which the first lower molar has but 7 prismatic spaces; but the first upper molar in *A. sikimensis* is different from that in any known European or American form, though, as will presently be noticed, there is a Western-Asiatic species with somewhat similar dentition There can be but little doubt that the distinction was observed by Hodgson; it was noticed by Jerdon, and appears to have been the principal character upon which Hodgson's genus *Neodon* was founded. Another peculiarity of *A. sikimensis*, also mentioned by the same naturalists, is that the posterior lower molars are scarcely narrower than the preceding tooth. In most species of *Arvicola* there is a much greater diminution in the breadth of the lower molars posteriorly.

Although I fully admit the value of the distinction, I fail to see that the presence of this additional angle in the first upper molar of *A. sikimensis* proves that that species is generically distinct from *A. agrestis* (*Agricola*). The difference appears to me of the same value* as that between *A. agrestis*, for instance, and *A. arvalis;* that is to say, the distinction is merely sectional or subgeneric. I consequently consider *Neodon* a section or subgenus of *Arvicola*.

The species from Moupin, in Eastern Tibet, called *A. melanogaster* by A. Milne-Edwards, has a somewhat peculiar dentition owing to so many of the angles on opposite sides of the molars corresponding and the spaces on the crowns of the teeth being consequently double or diamond-shaped instead of triangular, and their number necessarily smaller. The number of internal and external angles in the first and second upper molars is however, the same as in *A. sikimensis*, and the species may therefore, for the present, be assigned to the same section.

---

* In the 'Scientific Results of the Second Yarkand Mission,' Mammalia, p. 41, footnote, I remarked that the additional prism on the last upper molar of *A. saxatilis* and *A. brandti* appeared to be quite as important as the presence of one ridge more, than in other species, on the first upper molar of *A. sikimensis*. After a more extensive study of the genus than I had the opportunity of making in Calcutta, I prefer to modify this view. The last upper molar in *Arvicola* appears to be more variable than the first, and differences in the latter tooth appear therefore more important for purposes of classification than similar characters in the former. At the same time, I see no reason to alter the view I then expressed that such differences are not of generic value.

The Western-Asiatic form above referred to as resembling *Neodon* in its dentition is *A. guentheri*, Danford and Alston*, from Asia Minor. The posterior inner angles on the first and second upper molars, judging from the figure given, are less developed than in *A. sikimensis* (but still they exist), and all the molar teeth, both in the upper and lower jaws, are very similar to those in the Sikkim species. Externally *A. guentheri* is very different, as it has but a rudimentary thumb without any claw, a much shorter tail, different coloration, &c.

The following table will show how the species of Himalayan and Tibetan Voles hitherto described may be distinguished by the characters of their teeth :—

I. The anterior upper molar has 3 angles inside and 3 outside; the second 2 inside and 3 outside. The anterior lower molar has normally 7 spaces.
  A. The posterior upper molar terminates behind in a narrow process, prolonged backwards in the line of the jaw.—ALTICOLA.
    a. The posterior upper molar has two strong internal angles and four weak outer angles, the two anterior of the latter widely separated from the two posterior.
      α. The posterior lobe of the last upper molar behind the second inner angle is much less than half the length of the tooth... 1. *A. stoliczkanus.*
      β. The posterior lobe of the last upper molar behind the second inner angle is half the length of the tooth...... 2. *A. stracheyi.*
    b. The posterior upper molar has 2 internal and 3 external angles .... 3. *A wynnei.*
    c. The posterior upper molar has 3 angles on each side.
      α. In the anterior lower molar the first inner angle is behind (proximal to) the first outer .... 4. *A. roylei.*
      β. In the anterior lower molar the first inner angle is in front of (distal to) the first outer .... 5. *A. blanfordi.*
  B. The posterior upper molar does not terminate behind in a narrow process prolonged backward in the line of the jaw.—PALUDICOLA.
    a. The posterior upper molar has 3 external angles, and the first lower molar 4...6. *A. blythi*
    b. The posterior upper molar has 4 external angles, and the first lower molar 5.. 7. *A. mandarinus ?*

---

* P. Z. S. 1880, p. 62, pl. v.

II. The anterior upper molar has 4 angles inside and 3 outside; the second 3 inside and 3 outside; the anterior lower molar has normally 9 spaces.—NEODON.

A. The posterior inner angle in the two anterior upper molars is weaker than the other inner angles of the same tooth; the last upper molar ends with an internal projecting spur; the first lower molar has 6 well-marked angles inside .... 8. *A. sikimensis.*

B. The posterior inner angle in both the anterior upper molars is usually equal or nearly equal to the others; the last upper molar, as a rule, does not terminate with an internal spur; the first lower molar has 5 well-marked angles inside .... 9. *A melanogaster.*

N.B. The differences in the molar teeth of the last two species are not constant, and the distinction of the species depends on external characters.

In the next table an attempt is made to discriminate the forms by external characters:—

I. Thumb rudimentary and clawless.
Colour light ferruginous brown .... 1. *A. stoliczkanas.*
Colour light brown, with a grey tinge .... 2. *A. stracheyi.*

II. Thumb with a small claw.

A. Ears short, not projecting beyond the fur.
Colour dark rich brown, lower parts light brown .... 3. *A. wynnei.*
Colour yellowish brown, with a rufous tinge; lower parts buff .... 4. *A. roylei.*
Colour earthy brown; lower parts whitish............ 6. *A. blythi.*
Colour light greyish rufescent brown (isabelline); lower parts white .... 7. *A. mandarinus;*

B. Ears projecting beyond the fur.

a. Ears only projecting by about one third of their length.
Colour dark yellowish or rufous-brown; underparts slaty grey; hind foot $\frac{8}{10}$ inch, ear less than $\frac{3}{8}$ inch long 9. *A. melanogaster*

b. Ears projecting by fully half their length.
Colour dark yellowish brown; lower parts slaty grey; hind foot $\frac{3}{4}$ inch, ears fully $\frac{1}{2}$ inch long; tail one third the length of the head and body .... 8. *A. sikimensis.*
Colour light greyish rufescent brown; ears nearly $\frac{3}{4}$ inch long; tail half the length of the head and body.. 5. *A. blanfordi.*

Section I. ALTICOLA.

The first lower molar with, normally, 7 spaces, 4 or 5 external and 5 internal angles; the first upper molar with 5 spaces, 3 inner and 3 outer angles; the second with 4 spaces, 3 outer and 2 inner angles; the third terminating in an elongate lobe, produced backwards in the line of the jaw.

1. Arvicola stoliczkanus.

Arvicola stoliczkanus, *W. Blanford, J. A. S. B* 1875, xliv. pt. 2, p. 107; *Scient. Res. Second Yarkand Miss., Mamm.* 1879, p. 42, pl. viii. fig. 1, pl. x *b*. fig. 2.

Colour bright ferruginous brown above*, white below, the two colours sharply divided; feet and tail white.

Fur soft, rather woolly, dark leaden grey at the base, the terminal fourth on the back rufous-white, tipped with darker rufous, numerous rather longer hairs with dark rufous-brown tips being intermixed.

Ears small, completely concealed by the fur, covered with short bright rufous hair towards the margin inside, and with longer and paler hair outside.

Feet small; claws long, compressed, much concealed by long white hairs; thumb quite rudimentary and clawless. Tarsus hairy below, and with a few hairs between the pads of the toes.

Tail short, apparently about a quarter the length of the head and body together, covered with stiff fulvescent white hair, which extend half an inch beyond the end.

	inches.
Length of head and body	4·0
,, tail without hairs	1·0
,, tarsus and hind foot with claws	0·7
,, skull	1·15

The description and measurements are from dried skins.

The following are the characters of the molar teeth :—

Upper molar	I, 5	spaces,	3	external	and	3	internal	angles.
,, ,,	II, 4	,,	3	,,	,,	2	,,	,,
,, ,,	III, 3	,,	4	,,	,,	2	,,	,,
Lower molar	I, 7	,,	5	,,	,,	5	,,	,,
,, ,,	II, 5	,,	3	,,	,,	3	,,	,,
,, ,,	III, 3	,,	3	,,	,,	3	,,	,,

The hinder upper molar has two strong salient angles on the anterior portion of the inner side; on the outer side there are anteriorly two weak angles rather close together, then a deep sinus or emargination opposite to the second inner angle, and behind this the tooth terminates in a narrow elongate process with two slight projecting angles on the external side only, none on the inside. This process behind the second inner angle is much less than half the length of the tooth.

The only two specimens of this species hitherto examined are from the high plateaus of Northern Ladák (Western Tibet).

---

* In the figure given in the 'Scientific Results of the Second Yarkand Mission the colour is too dull and brown: it should be more rufous.

2. **Arvicola stracheyi.** (Teeth, Plate I. fig. C.)

Arvicola stracheyi, *Oldfield Thomas, Ann. & Mag. Nat. Hist.* Oct. 1880, ser. 5, vol. vi. p. 332.

Colour light brown, with a grey tinge above, white below; forehead rather dusky; feet and tail white.

Fur soft, long, slaty grey at the base; on the back there is a pale whitish band on the hairs, a little way from the skin (this may, perhaps, be an individual peculiarity or due to season, only one specimen being known) the first and third fourths of the length being slaty grey and the terminal fourth brownish yellow, some hairs with black tips being interspersed. On the lower parts the basal half of the hairs is grey, the terminal half white.

Ears small, not projecting beyond the fur and thickly covered inside and out with moderately long hair.

Feet of moderate size; claws pale, overhung with hairs; thumb quite rudimentary and clawless; fourth toe in the fore foot slightly longer than the second, and the third longer than the fourth by about the same difference. In the hind foot the second and fourth toes are nearly equal, third very little longer. Tarsus hairy below.

Tail short (vertebræ preserved), apparently not more than one fifth the length of the head and body, covered with white hairs, which extend half an inch beyond the end.

	inches.
Length of head and body	3·7
„ tail without hairs.	0·7
„ tarsus and hind foot without claws...	0·65

The description and measurements are from a single dried skin brought by Capt. (now Lieut.-Gen.) R. Strachey from Kumaon, and presented to the East-India Museum, where it was entered in the Catalogue as *Cricetus songarus.* When the zoological specimens of the East-India were incorporated in the British Museum, the skull was extracted by Mr. Thomas and the real nature of the animal recognized.

The following are the characters of the molar teeth :—

Upper molar	I, 5	spaces,	3	external	and	3	internal	angles.
„ „	II, 4	„	3	„	„	2	„	„
„ „	III, 3	„	4	„	„	2	„	„
Lower molar	I, 7	„	5	„	„	5	„	„
„ „	II, 5	„	3	„	„	3	„	„
„ „	III, 4	„	3	„	„	3	„	„

The hinder upper molar much resembles that of *A. stoliczkanus*, and like the latter, has two strong salient angles on the anterior portion of the inner side followed by the straight inner edge of the long posterior lobe. On the outer side there are, anteriorly, two weak angles rather close together, then a deep sinus opposite to the second inner angle, and behind this the tooth terminates in a narrow elongate process with two slight angles on the outer side only; none inside. This process, behind the second inner angle, is half the length of the tooth.

In the first lower molar the anterior inner and outer angles are almost rudimentary on the crown, but they form distinct folds on the sides of the tooth*. The first three spaces in this tooth are confluent, the first two especially are scarcely separable. The same is the case with the first and second spaces in the second lower molar, and with the second and third spaces in the third; in the latter case the two are just sufficiently distinguishable to be counted apart.

3. **Arvicola wynnei.** (Teeth, Plate I, fig. B.)

Arvicola wynnei, *W. Blanford, J. A. S. B.* 1880, Vol. XLIX, Pt. II, p. 244.

Colour above dark rich brown, with a slight greyish tinge†; head rufescent; lower parts pale brown; tail the same colour as the back; feet covered with brown hairs above, soles pale.

Fur very soft; hairs very dark leaden grey, nearly black at the base, and for three fourths to four fifths of their length on the back, the tips being rufous-brown in general, some more or less grey; the terminal portion on the lower parts pale brown. No longer hairs on the back; a few scarcely exceeding the rest of the fur, on the rump. The length of the hair on the back in skins collected in the summer and autumn is half an inch or rather less.

Ears short and rounded, completely concealed by the fur, thinly clad with long hair on the external surface, and with short brown hair on the inside towards the border; a tuft of long hair on the anterior edge of the inner surface.

Whiskers brown, the lower greyish, the longest reaching the ear.

Feet moderate; fore feet rather large; claws long, compressed, white, not overhung with long hairs. Thumb of fore foot short, with a short compressed claw; the middle toe exceeds the fourth by about half the length of the terminal phalanx; the fourth is scarcely longer than the second, which extends by about the length of its last phalanx beyond the fifth. In the hind foot the third toe is very little longer than the second, which, again, is but little longer than the fourth. This exceeds the fifth by more than the length of its last phalanx, and the fifth is longer than the first by about half the same length. There are five pads or tubercles beneath the fore foot; the two hinder the largest, opposite to each other and to the base of the thumb; the three distal pads small, and arranged in a triangle at the base of the toes. On the sole of the hind foot there are also five tubercles—two in front, one on each side of the base of the middle toe, another pair at the base of the two outer toes, the outer nearer the distal extremity of the foot than the inner, and the fifth at the proximal extremity of the naked sole, and about as far behind that at the base of the fifth toe as the latter is from the pair at the base of the middle toe. Lower portion of tarsus hairy.

---

* They are not counted in the original description; but I think that similar folds should be noticed, and they appear to be included by Blasius.

† In one specimen preserved in spirits the greyish tinge is wanting, and the colour above dark chestnut.

Tail between one third and one fourth the length of the head and body, almost cylindrical, diminishing but little in thickness towards the end, clothed with long hair at the base, and with short brown hair throughout the terminal three quarters of its length. The hairs only project one eighth to one fourth of an inch beyond the end of the tail.

The following are the dimensions of the specimens, both adult males, in spirit* :—

	in.	in.
Length of head and body from nose to vent	4·75	3·5
Tail from vent (hair at end not included)	1·35	1·2
Height of ear from orifice	0·25	0·26
Breadth of ditto	0·25	0·26
Length of fore foot without claws	0·4	0·4
,, hind foot and tarsus without claws	0·7	0·7
,, claw of middle toe	0·11	0·13

The incisors are deep orange. The following are the characters of the molars:—

Upper molar	I,	5	spaces,	3	external	and	3	internal	angles.
,, ,,	II,	4	,,	3	,,	,,	2	,,	,,
,, ,,	III,	4	,,	3	,,	,,	2	,,	,,
Lower molar	I,	7	,,	4	,,	,,	5	,,	,,
,, ,,	II,	3	,,	3	,,	,,	3	,,	,,
,, ,,	III,	3	,,	3	,,	,,	3	,,	,,

The two anterior upper molars resemble those in all other Himalayan *Arvicolæ* except *A. sikimensis* and *H. melanogaster*, and in the majority of European and American forms. The hinder upper molar has two small salient angles on the outer side in front, much closer together and smaller than the two inner angles. Behind the second outer angle there is a sinus, a very little deeper and somewhat broader than that between the first and second. The posterior portion of the tooth is a nearly oval longitudinal lobe, forming rather more than one third the length, more prominent externally than internally, so as to form a blunt third external angle, but not sufficiently prominent on the inner side to form a third inner saliency. The spaces or prisms of a tooth like this are always somewhat indefinite; the first space is enclosed by the anterior outer and the corresponding inner angle; the second is not separated from the first, and is enclosed by the second outer angle, the third by the second inner angle, and the fourth corresponds to the posterior lobe.

---

* Spirit-specimens always measure rather less in the length of the body and ears than freshly-killed animals.

In the first lower molar the first three spaces are confluent, and so are the fourth and fifth. The anterior outer and inner angles project less than those behind; the first inner angle especially, which is close to the extremity of the tooth, and much in advance of the first outer angle, is weak and rounded; these two anterior angles enclose the first space, which is oblong-ovate, with its longer diameter diagonally placed. The third inner and outer angles are so nearly opposite to each other that it is almost a question whether the two spaces they enclose should not be considered as one. In the second and third lower molars all the spaces are lozenge-shaped, the outer and inner angles being nearly or quite opposite to each other, and each space being bounded both by an exterior and an interior angle. The outer external angles of the third lower molar are rather less prominent than the inner. The third molar is considerably narrower than the second, and the second somewhat narrower than the first.

The interparietal bone is subtriangular. The hinder margin, neglecting small projections and emarginations, runs nearly straight, and consists of two slightly concave halves meeting in a trifling angle, projecting in the middle; the anterior margin is formed by two almost straight lines meeting in the middle of the skull at an angle a little more open than a right angle, without any point projecting anteriorly beyond the angle. The nasals in the only skull I have extracted are slightly injured behind, so I cannot determine the shape of the posterior extremity; the outer edge of each appears to be convex throughout, not emarginate posteriorly.

The following are the dimensions of a skull:—

	inches.
Length from occipital plane to end of nasals	1·14
,, of nasals	0·34
Breadth across widest parts of zygomatic arches	0·74
,, between orbits where narrowest	0·18
,, of nasal bones in front	0·14
,, of interparietal bone	0·23
Length of upper molars together	0·28

Distance from upper molars to incisors	0·38
Length of lower jaw from condyle to symphysis	0·75
,, of lower molars together	0·27

This species has been described from two specimens in spirit and two skins, procured at the hill-station of Mari (Murree) in the Punjab by Mr. A. B. Wynne, of the Geological Survey of India. All the specimens were captured, I believe, by a house-cat; so the animal is probably common in the gardens of the station. The native name is *Kanis* (Kunnees).

There is in the British Museum a specimen in spirit of an *Arvicola* of unknown locality, but probably Himalayan, and very possibly from Kashmir, having the same dentition as *A. wynnei*, but differently coloured with larger ears. This specimen was obtained by purchase, together with a specimen of *Nesokia bengalensis* (*N. indica*, Blyth and Jerdon) and some other mammals, all apparently Indian, but all supposed at the time to be from Africa. I shall not name a specimen of such dubious antecedents; there is not sufficient evidence that it is even Indian, or that it comes from the same country as the associated specimens; but as it is far from improbable that it may prove to be Himalayan, the following characters may enable the species to be identified when met with:—

Colour brown (about the same as a wild rabbit, not dark rufous brown like typical *A. wynnei*) above, whitish below. The tail much darker above than below. Feet brown above, similar in proportions and pads to those of *A. wynnei.* Ears rounded, projecting considerably beyond the fur. Teeth as in *A. wynnei.*

	inches.
Length of head and body from nose to vent	4
,, tail from vent (hair at end not included)	1·3
Height of ear from orifice	0·42
Breadth of ditto	0·37
Length of forefoot without claws	0·35
,, hindfoot and tarsus ,,	0·7

It should be mentioned that the peculiar form of the last upper molar, characteristic of the Section *Alticola*, has hitherto only been found in Himalayan species of *Arvicola.*

4. **Arvicola roylei.** (Teeth, Plate I. fig. D.)

Arvicola roylei, *Gray, Ann. & Mag. Nat. Hist.* Vol. X, p. 265 (1842); *Schreber, Säugth. Suppl.* III, p. 587 (1843); *Giebel, Säugth.* p. 613 (1859); ? *Blyth, Cat. Mamm. Mus. As. Soc.* p. 125 (1863); *Jerdon, Mammals of India*, No. 202, p. 216 (1867).

Colour above yellowish brown,* rather rufous in the middle of the back, below paler and isabelline or fulvous; tail brown above, white below; feet apparently the same colour as the lower parts.

Fur dark slaty at the base and for about two thirds of the length, the terminal third being tawny at first, the tips partly brown, partly black on the upper parts; on the lower parts all the tips are tawny.

Ears small, hairy, concealed by the fur.

Feet small; claws pale, short, overhung by hairs; thumb in the fore foot very small, but with a distinct claw; middle finger but little longer than the fourth, which is considerably longer than the second. The characters of the toes in the hind feet, which are contracted in the dried skin, cannot be made out clearly.

Tail nearly cylindrical, apparently rather more than a third of the length of head and body together, and covered with short hair, which only extends a short distance beyond the end, and is rather darker and more rufescent above than below.

The measurements are taken from the dried skin (1); those given by Jerdon, from a specimen collected by himself, are added (2) as will be shewn presently, it is not certain that this specimen was of the same species.

	(1) in.	(2) in.
Length of head and body	3	3·75
„ of tail-vertebræ	1·1	1·375
„ of tarsus and hind foot without claws	0·8	

The following are the characters of the molar teeth:—

Upper molar I,	5 spaces,	3 external and	3 internal angles.	
„ „ II,	4 „	3 „ „	2 „ „	
„ „ III,	3 „	3 „ „	3 „ „	
Lower molar I,	7 „	4 „ „	5 „ „	
„ „ II,	5 „	3 „ „	3 „ „	
„ „ III,	3 „	3 „ „	3 „ „	

In the first upper molar the anterior outer angle is a little in front of the corresponding inner angle. The last upper molar has three nearly equidistant outer angles, but the hollow between the two posterior angles is much deeper than that between the two anterior, the three inner angles are also nearly equidistant; the hindmost portion of the tooth behind the third internal angle is a longitudinal lobe, forming about one third of the whole length, and without angles; the anterior space is continued between the first inner and first and second outer angles; the second space corresponds to the second inner angle; the third space is enclosed by the posterior angle on each side and the lobe.

---

* Gray calls the colour rufous-grey. As he undoubtedly described the same skin as I have examined, I can only say that his ideas of coloration were different from mine, for it is difficult to believe that the colour has changed from rufous-grey to yellowish brown. A change from yellowish brown to rufous-grey would be far more likely to result had the specimen been exposed to light; to the best of my belief, however, the skin has not been exposed. Jerdon calls the colour ashy brown, with a tinge of rufous more or less apparent; but he described different specimens, and as he did not examine the teeth it is by no means certain that they belonged to the same species.

In the first lower molar the anterior angle on each side is very small and blunt, and there is a rudimentary fifth external angle in front; the first and second spaces, the latter corresponding to the second inner angle, are not separate. In the second lower molar the first space is confluent with the second, and the third with the fourth. Similarly in the third lower molar the first and second spaces are not distinct, nor are the third and fourth.

The above description is from the single type, a dried skin in poor condition, obtained by Royle in Kashmir. Jerdon states that he found this species in Kunawar near Chini, and observed it on the Pir-Panjal pass, south of Kashmir; but he had no opportunity of comparing specimens; and as so many additional species have since been described it is possible the voles he saw may not have been *A. roylei.* The locality given by Blyth (Pind Dádun Khán, in the Panjab) is probably, as already noticed, due to a mistake.

5. **Arvicola blanfordi.** (Teeth, Plate I, fig. E.)

Arvicola blanfordi, *J. Scully, Ann. & Mag. Nat. Hist.* Nov. 1880, Ser. 5, Vol. VI, p. 399.

Colour above rather light greyish brown, with a very slight rufous tinge, below greyish white; feet white; tail brown above, sullied white below.

Fur soft, the hairs slaty grey at the base, and on the back for about three quarters of their length, the terminal fourth on the upper parts fawn-colour, numerous rather longer hairs with black tips being interspersed. On the lower parts the tips of the hairs are white.

Ears of moderate size, rounded, projecting considerably beyond the fur, covered with moderately short hair inside near the margin, and outside except on the anterior part of the outer surface, where the hair is longer.

Whiskers long, some of them extending beyond the tips of the ears, the greater portion white, a few dark brown.

Feet of moderate size; claws white, compressed, not long, overhung with long hairs; thumb of fore foot very small, almost rudimentary, but furnished with a small claw; middle finger very little longer than the fourth, but there is much more difference between the latter and the second, about as much as there is between the second and fifth. Tubercles beneath the fore foot five in number, all of good size and near together, three in a triangle at the base of the middle toes, and two opposite to each other and to the base of the thumb. In the hind foot the second and fourth toes are very nearly the same length, and but very little shorter than the third; the fourth exceeds the fifth by rather more than the length of the terminal phalanx of the former, and the difference between the fifth and first is less, being about the length of the distal phalanx of the fifth toe. There are six pads or tubercles on the sole of the hind foot, the three inner much further apart than the three outer, the last outer being rather smaller than the rest, and the last inner pad, which is considerably behind all the others, being situated rather nearer to the most distal tubercle than to the heel. Lower portion of tarsus well covered with hair.

Tail between one third and one half the length of the head and body, cylindrical, scarcely diminishing in diameter towards the tip, well clad with hair, which projects about one fifth of an inch beyond the end of the vertebræ.

The following dimensions are (1) of a fresh adult male specimen taken by Dr. Scully, and (2) of an adult male in spirit:—

	(1) in.	(2) in.
Length of head and body from nose to vent	4·55	3·9
„ of tail from vent (hair at end not included)	2·05	1·9
Length of ear from orifice..................................	0·7	0·58
Breadth of ear	0·68	0·54
Length of fore foot without claws	0·4	0·4
„ of hind foot from heel with out claws..........	0·75	0·76

The molars have the following characters:—

Upper molar	I,	5 spaces,	3 external	and 3	internal	angles.
„ „	II,	4 „	3 „	„ 2	„	„
„ „	III,	4 „	3 „	„ 3	„	„
Lower molar	I,	7 „	4 „	„ 5	„	„
„ „	II,	5 „	3 „	„ 3	„	„
„ „	III,	3 „	3 „	„ 3	„	„

In the first upper molar the anterior outer angle is distinctly nearer the hinder part of the jaw than the anterior inner angle. The third upper molar has three nearly equidistant outer angles, the sinus intervening between the second and third angle being much deeper than that between the first and second. The inner angles in this tooth are much more prominent than the outer. The longitudinal lobe forming the posterior portion of the tooth behind the third internal angle is of small length, scarcely one fourth of the tooth; there are two rudimentary external and one internal angle on the lobe that are not counted. The spaces are not very different from those in *A. roylei*, although one more is counted; the first is bounded by the first internal and first two external angles; the second corresponds to the second internal angle; the third, which is small, to the third external angle, whilst the fourth is iucluded by the third internal angle and the posterior lobe.

On the first lower molar there is a rudimentary anterior external angle that has not been counted, the first internal angle is much smaller than the others, and the first external somewhat less prominent. The first and second spaces, the latter corresponding to the second inner angle, are not separated. In the third molar the second space is almost double, the two angles not being quite opposite, and it is a question whether this tooth should be considered as having 3 spaces or 4.

Interparietal with the hinder border almost straight; each of the lateral margins forms an ogee curve, concave anteriorly, convex behind, and meeting the posterior margin at an angle rather less than a right angle. The lateral angles are not produced; the anterior angle projects very slightly forward.

Dr. J. Scully has done me the honour of naming this Vole after me. It is found commonly on the mountains around Gilgit at an elevation of 9000 to 10,000 feet. It is closely allied in the structure of the teeth to *A. roylei*, but differs widely in external characters, the tail and ears being much longer and the coloration quite different.

This species, in which the posterior lobe of the last upper molar is less developed than in the other four forms of the section, shows a passage to *Paludicola.*

SECTION II. PALUDICOLA.

The first lower molar with normally 7 spaces, 4 or 5 external and 5 internal angles; the first upper molar with 5 spaces, 3 inner and 3 outer angles; the second with 4 spaces, 5 outer and 2 inner angles; the third not terminating in an elongate lobe.

6. **Arvicola blythi.** (Teeth, Plate II, fig. B.)

Phaiomys leucurus, *Blyth, J. A. S. B.*, 1863, XXXII, p. 89; *Theobald, J. A. S. B.*, 1862, XXXI, p. 519; *Stoliczka, J. A. S. B.*, 1865, XXXIV, p. 110. *Nec* Arvicola leucurus, *Gerbe* (1852); *nec* idem, *Severtzoff* (1873).

Arvicola blythi, *W. Blanf. J. A. S. B.*, 1875, XLIV, pt. 2, p. 107; *id. Scientific Results Second Yarkand Mission, Mammalia*, p. 39, pl. VIII, fig. 2, & pl. X, *b.* fig. 1.

Colour above earthy brown (yellowish brown with a greyish tinge), below brownish white. Feet the same colour as the underparts; tail light brown.

Fur soft, the basal two thirds on the upper surface, and about one half on the lower, dark slaty; the tips on the upper surface of two kinds—the finer isabelline, the coarser dark brown, almost black; tips on the abdomen brownish white.

Ears small, round, not extending beyond the fur, thinly clad with light-brown hairs inside, more thickly and with longer hairs outside.

Whiskers dark brown above, white below, the longest nearly an inch in length.

Feet of moderate size; claws compressed, horn-coloured; thumb short, with a short compressed claw.

Tail cylindrical, about one fourth to one third the length of the head and body, covered with short hair.

The following dimensions are (1) from a fresh specimen taken by Dr. Stoliczka, (2) from another fresh specimen, a large female, by Mr. Theobald, (3) from an adult specimen in spirit:—

	(1) in.	(2) in.	(3) in.
Length of head and body	4	4·9	3·7
,, of tail, without hairs at end	1·35	1·25	1·1
,, of ear			0·33
Breadth of ear			0·37
Length of fore foot and claws			0·45
,, of hind foot and claws...			0·82
,, of skull			1·03

The following are the characters of the molar teeth:—

Upper molar I,	5	spaces,	3	external and	3	internal angles.
,, ,, II,	4	,,	3	,, ,,	2	,, ,,
,, ,, III,	5	,,	3	,, ,,	3	,, ,,
Lower molar I,	7	,,	4	,, ,,	5	,, ,,
,, ,, II,	5	,,	3	,, ,,	3	,, ,,
,, ,, III,	4	,,	2	,, ,,	3	,, ,,

In the third upper molar all the internal angles are much more prominent than the outer, and the first two internal angles are more developed than the last. The first space is included by the first internal and first external angle, the second space by the second external angle, the third by the second internal, the fourth by the third external, and the fifth by the third internal angle; the last two are not separate, but form together an inequilateral arrowhead,[*] the internal angle being nearer to the posterior extremity of the tooth, but directed forwards, and with a deeper notch in front of it than the other angles.

In the first lower molar the first outer angle is much rounder and less prominent than the others. The third lower molar is peculiar, as the usual anterior outer angle is completely wanting,[†] and the first outer angle (corresponding to the second in other *Arvicolæ*) is very small and not so prominent as the second, which, again, is inferior in size to each of the three inner angles. The first space corresponds to the first inner angle, the second space to the second inner and first outer, the third space to the second outer angle, and the fourth space to the third inner angle. The last two spaces are confluent in some specimens.

The interparietal has the hinder edge nearly straight, and the two lateral edges forming an ogee curve, the concave portion near the anterior angle, the convex external; the anterior angle slightly prominent, the lateral angles not so, each of the latter being a little less than a right angle.

This species has been obtained in two parts of Western Tibet—on the banks of the Tsomoriri, a large lake north of Spiti, and in the country between Leh and the Pankong lake in Ladák. Both places are at a considerable elevation, over 13,000 feet above the sea.

7. **Arvicola mandarinus?**, var. (Teeth, Plate II, fig. C.)

? Arvicola mandarinus, *A. Milne-Edwards*, *Recherches Mammifères*, p. 120, pl. XII, fig. 4, pl. XIII, fig. 4.

Golunda meltada, *Gray* ("var. or distinct species from Griffith's collection in Afghanistan"), *Horsf. Cat. Mamm. Mus. E. I. Co.*, p. 144.

The following description is that of the Afghan skin in the British Museum:—

Colour rufescent fulvous (light greyish rufescent brown) above, white beneath; tail the same as the back; feet whitish.

Fur soft, basal two thirds leaden black; tips isabelline (pale fulvous), a few slightly longer black tips interspersed throughout the dorsal surface.

Ears short, concealed by the fur, hairy inside and out.

Feet of moderate size; thumb of fore foot very short, but furnished with a claw; claws of moderate length, pale in colour, overhung by the hairs of the toes. In the fore foot the difference between the fourth and second toes is about double that between the third and fourth, and equal to that between the second and third. In the hind foot the third toe is distinctly the longest, and there is but little difference between the second and fourth; tarsus hairy beneath.

---

[*] In the description of the Mammalia of the Second Yarkand Mission I described this tooth as composed of four lobes, the two posterior spaces being counted together.

[†] A somewhat similar character is shown in Blasius's figure of the corresponding tooth in *A. agrestis* (Säugh. Deutschl. p. 370) and in that of the *petrophilus*-form of *A. nivalis* (ib. p. 360), but not to the same extent as in *A. blythi*.

Tail about a quarter the length of the head and body (judging from the dried skin), covered with short hairs extending about $\frac{1}{8}$ inch beyond the end.

	inches.
Length of skin from nose to vent	4
" tail without hairs at end (the vertebræ preserved)...	1
" hind foot, without claws..................................	0·67

The skull extracted from the skin is imperfect, and the hinder portion (including the interparietal) is wanting. The nasals are rounded at their posterior extremity; they do not extend quite so far back as the premaxillaries, and their outer edges are slightly concave. The following are the characters of the molar teeth:—

Upper molar	I,	5	spaces,	3	external and	3	internal angles.
" "	II,	4	"	3	" "	2	" "
" "	III,	5	"	4	" "	3	" "
Lower molar	I,	7	"	5	" "	5	" "
" "	II,	5	"	3	" "	3	" "
" "	III,	4	"	2	" "	3	" "

On the third upper molar there is a rudimentary fourth inner angle; the third and fourth outer angles are less marked than the others; the spaces might be reckoned either 4 or 6; the three first are well separated, but not those behind. In the first lower molar the two anterior external angles are blunt and ill-developed; they, with the first internal angle, enclose one space. In the third lower molar, as in the corresponding tooth of *A. blythi*, the usual anterior external angle is entirely wanting; the second and third spaces are imperfectly separated.

The molars thus closely resemble those of *A. blythi*, but there is an additional outer angle on the third upper molar and another on the first lower molar, whilst the first outer angle on the third lower molar is better developed and includes a space to itself. These differences are not of specific value by themselves, but the external differences are more important.

I have examined the types, two in number, of *A. mandarinus*, in the Paris Museum (Jardin des Plantes). They are rather browner than the Afghan specimen, but otherwise coincide very fairly; they have a small thumb with a claw. The colour is light rufous-brown, and the fur is long and soft, dark slaty at the base, with isabelline (pale fulvous) tips. The molars have the following characters :—

Upper molar I, 5 spaces, 3 external and 3 internal angles.
" " II, 4 " 3 " " 2 " "
" " III, 4 " 4 " " 3 " "
Lower molar I, 7 " 4 " " 5 " "
" " II, 5 " 3 " " 3 " "
" " III, 3 " 2 " " 3 " "

The two hinder external angles of the third upper molar are ill-developed, and very possibly the last disappears in some cases ; the last space is formed by the two last outer and the last inner angle.

It will be seen that the number of the spaces in the third upper and lower molars is not precisely the same, although the number of angles coincides. But the precise number of spaces in these two teeth is not of much importance, and may even vary with age.

The type was collected by W. Griffith in Afghanistan, and until the skull was examined was not known to be an *Arvicola.* The exact locality is of course doubtful.

Section III. NEODON.

The first upper molar has 3 external and 4 internal angles ; the second 3, both inside and out. The first lower molar has 5 or 6 internal and 5 external angles.

8. **Arvicola sikimensis.** (Teeth, Plate I, fig. A.)

" Neodon sikimensis, *Hodgson,*" *Horsfield, Ann. & Mag. Nat. Hist.* Ser. 2, Vol. III, p. 203 (1849) ; *id. Cat. Mamm. Mus. E. I. Co.* pp. 145, 146 (1851) ; *id. P. Z. S.* 1856, p. 401 ; *Gray, Cat. Spec. Mamm. &c. Nepal and Tibet, Brit. Mus.* 2nd edit. (1863), No. 117, p. 11 ; *Blyth, Cat. Mamm. As. Soc* (1863), No. 311, p. 125 ; *Jerdon, Mamm. Ind.* (1867), No. 203, p. 217 ; *W. Blanf. Scientific Res. Second Yarkand Mission, Mammalia,* pp. 41, note, 42 (1879).

Arvicola thricolis (thricotis), *Hodgson, Cat. Spec. Mamm. &c. Nepal and Tibet, Brit. Mus.* 2nd edit. No. 116, p. 10 (not described).

Arvicola nigrescens, *Hodgson, tom. cit.* p. 11, (undescribed).

Bicunedens perfuscus, *Hodgson, tom. cit.* p. 11, (undescribed).

Phalchua *of Nepalese ;* Cheek yu, *Kiranti ;* Sing phuchi, *Tibetan* (*teste Hodgson*).

Colour above yellowish brown, almost golden brown, a dark brown minutely interspersed with yellow[*] ; below slaty grey, slightly washed with fulvous. Tail the same colour as the back ; feet brown above.

---

[*] This is the colour in two specimens before me—one a dry skin, the other preserved in spirit. Horsfield, however, whose description was copied by Jerdon, de-

Fur soft, leaden grey at the base; the terminal fourth on the back light brown, almost tawny, with numerous rather longer black-tipped hairs intermixed. On the underparts the extreme tips only of the hair are whitish; but here also longer and coarser hairs with dirty-white ends, are intermixed.

Ears not covered by the fur, but projecting for about half their length, rounded, very thinly clad inside and out with short dark-brown hair. A tuft of long hair on the base, just below the orifice, and long hair on the anterior part of the outer surface. The anterior portion of the inner and posterior portion of the outer surface almost naked.

Whiskers of moderate length, extending to the ears, but not beyond them; some black, others grey.

Feet of moderate size; claws horn-colour, not white, short, compressed, overhung by hairs, which often exceed the claws themselves in length. Thumb very short, but furnished with a small claw. The middle toe in the fore foot only just longer than the fourth, which exceeds the second by nearly the length of the terminal phalanx; the fifth only comes short of the second by about half the same length. Tubercles on the sole of the fore foot 5 in number, the three anterior arranged in a triangle at the base of the four longer toes, the posterior pair opposite each other in a transverse line at the base of the thumb, that nearest the thumb being especially large. In the hind foot the three middle toes differ but little in length, the third just exceeding the fourth, which is a little longer than the second; the latter, by the length of its terminal phalanx, exceeds the fifth, and there is a still greater difference between the fifth and the first. The pads or tubercles are 6 in number, one, however, being very small and very possibly wanting* in some individuals; the two anterior are close together, the inner of the two being nearer the heel or proximal to the other, the third a little further back at the base of the fifth toe, the fourth at the base of the first, the posterior pair as far behind the second pair as the fourth pad is behind the second; the outer of the last pair is thus considerably in advance of the inner, and is small and rudimentary; the last of all is situated about halfway between the base of the middle toe and the heel. The tarsus is almost naked below.

Tail fully one third the length of the head and body, or rather more, diminishing gradually (not rapidly) in thickness behind, thinly clad with short brown hair, which projects but little beyond the end.

---

scribed the colour above as "deep brownish black, with a slight rusty shade, minutely and copiously grizzled with hairs of a deep ferruginous tint." This may indicate that some individuals are much more rufous than those I have examined.

* It was wanting in the specimens examined by Hodgson.

The following measurements are (1) those given by Hodgson,* apparently from a fresh specimen, (2) from an adult female specimen in spirits:—

	(1) in.	(2) in.
Length of head and body from nose to vent	4·75	4
Tail from vent (hair at end not included)	1·75	1·6
Height of ear from orifice..		0·5
Breadth of ear		0·35
Length of fore foot (palma), without claws	0·44	0·35
„ of hind foot and tarsus, without claws	0·75	0·72

There are 6 teats according to Hodgson, but 8 in his MS. notes. In the specimen before me I find two pairs on the breast, both postaxillar; the inguinal mammæ appear undeveloped, and cannot be distinctly traced. The true number must be 8 at least.

Incisors deep orange. The following are the characters of the molar teeth:—

Upper molar I,	5	spaces,	3	external and	4	internal angles.
„ „ II,	5	„	3	„ „	3	„ „
„ „ III,	6	„	3	„ „	4	„ „
Lower molar I,	9	„	5	„ „	6	„ „
„ „ II,	5	„	3	„ „	3	„ „
„ „ III,	3	„	3	„ „	3	„ „

The hindmost inner angle of the first upper molar is much smaller than the others, and does not enclose a distinguishable space. The hindmost inner angles of the second and third upper molars are also smaller than the other angles of those teeth, and the enclosed spaces are not distinctly separate from those preceding. In the first lower molar the second space is imperfectly separated from the third, and the third from the fourth.

This species has hitherto only been found in Sikkim, at elevations of from 7000 to 10,000 feet. It inhabits forests, and, according to Hodgson, breeds in fallen trees.

Amongst the original drawings of Nepalese and Sikkim Mammalia presented to the Zoological Society of London by Mr. Hodgson, there are figures of *Neodon sikimensis* and *Arvicola thricotis*, the name *thricolis* of the British Museum catalogue being manifestly a misprint. These sheets, like those bearing other drawings in the same collection, are covered with MS. notes on habits and structure, visceral anatomy, &c., showing what a very large number of important observations Mr. Hodgson had accumulated. It may be added that when these drawings were made, the anatomy of allied European forms was very imperfectly known, but that, since fuller descriptions have been published, a large proportion of the anatomical details figured and explained in Mr. Hodgson's notes prove to be common to whole genera or even families. Such is the case in the present instance. There appears nothing in the anatomy of *A. sikimensis* to distinguish that species from European Voles.*

---

* Horsfield, from Hodgson's MS., P. Z. S. 1856, p. 401.

The intestines in two specimens, both females, were 26 and 28 inches long, the cæcum $3\frac{3}{4}$ and 4 inches, and $\frac{3}{8}$ wide, in one case 10 inches, in the other 13 from the anal end of the intestine. In a male the intestines measured 25 inches; the cæcum, 11 inches from the anus, was $6\frac{3}{4}$ inches long and rather less than half an inch broad. "Liver 3-lobed, each lobe divided, and a lobulus. Gall-bladder deeply imbedded in largest and central lobe, and having a large clear duct. Spleen 1 inch, tongue-shaped, and deep red." In the stomach the two orifices are said to be about a quarter of an inch apart.

Several measurements, evidently from fresh specimens, are given. They are useful as showing to some extent the amount of variation.

	1, ♂ in.	2, ♀ in.	3, juv. in.	4, ♂ in.	5, ♀. in.
Length from nose to anus	$4\frac{3}{8}$	$4\frac{1}{4}$	$3\frac{7}{8}$	$4\frac{1}{8}$	4
,, of head to nape	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{8}$
,, from snout to fore angle of eye.	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	
,, thence to base of ear	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{1}{2}$	$\frac{10}{16}$	
,, of ear entire	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Breadth of free portion (measured from the skull)	$\frac{5}{16}$	...	$\frac{5}{16}$	$\frac{3}{8}$	
Length of tail	$1\frac{3}{4}$	$1\frac{7}{8}$	$1\frac{5}{8}$	$1\frac{7}{16}$	$1\frac{7}{8}$
,, palma and nails	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{3}{8}$	$\frac{7}{16}$
,, planta and nails (from *os calcis*).	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{13}{16}$
Weight	$1\frac{1}{4}$ oz.	$1\frac{1}{4}$ oz.	...	$1\frac{1}{4}$ oz.	1 oz.

No. 5 is the type of *Arvicola thricotis*, which is separately figured. It will be seen that there is nothing in the dimensions to show any difference from *A. sikimensis;* the coloration is identical. But of several skins and specimens in spirit presented by Mr. Hodgson, not one is marked as *A. thricotis;* and as the publication of the name does not appear to have been authorized by that gentleman, it is probable that he had recognized the identity of the animal thus named with *A. sikimensis*. In Gray's second edition of the British Museum catalogue of Mr. Hodgson's specimens all that is stated of the species (which has, of course, never been described in print) is:—"*Hab.* Darjiling, in woods near houses. India Office, Nov. 1852 (in spirits). Compare with *Neodon sikimensis?*" From this it may fairly be inferred that the type was one of the spirit-specimens recently received at the British Museum from the East-India Museum. All such specimens are unquestionably *A. sikimensis.*

---

* For an account of the anatomy of *A. amphibius* and *A. agrestis* see H. Beger, Zeitschrift ges. Naturwiss. XXX, 1867, p. 145; and Retzius, Müller's Archiv. 1841, p. 403.

All Mr. Hodgson's specimens appear to have been obtained in Darjiling itself or the immediate vicinity of the station. In one case he obtained a male, female, and two young in a nest, saucer-shaped, made of soft grass, without any lining, 6 inches in diameter. The nest was in a decayed fallen tree in the forest. The young were "2⅛ inches long, hairy above, nude below, and blind; the ears also closed."

A story current amongst the people is noticed, to the effect that this animal, which the Hindi-speaking Nepalese call *Phal-chua*, or Fruit-Rat, appears at long intervals, and is produced out of the fruit of a tree, a large species of wild olive, said, on Dr. Thomson's authority, to be common in the deep forests of the central and northern region at 7000 to 15,000 feet (neither the botanical nor Nepalese name of the tree is given in the MS. notes). It is probable, from the existence of this story, that these Voles, like some other species of the genus, appear in much larger numbers at times.

9. **Arvicola melanogaster.** (Teeth, Plate II, fig. A.)

Arvicola melanogaster, A. Milne-Edwards, *Nouv. Arch. du Museum,* 1871, Vol. VII, p. 93; *Recherches pour servir à l'histoire naturelle des Mammifères,* Vol. I, p. 284, pls. XLIV, XLVI *a.*

Colour above varying from dark brown with a greyish tinge to blackish brown, below ashy grey. Tail the same colour as the back above, rather paler and greyer beneath. Feet brown above. In some specimens the head is lighter and more rufous above than the back; but in general there is no difference. Of a variety from Fokien several specimens are bright rufous-brown above. The usual colour, however, is precisely the same as in *A. sikimensis.*

Fur soft, dark leaden grey at the base, tips brown. In the darker specimens (one marked as killed in March) there are much coarser hairs intermixed. In the brown specimens this is not usually the case to the same extent, but there are a few longer black-tipped hairs on the back and rump.

Ears projecting slightly beyond the fur by about one third of their length, not nearly so much as in *A. sikimensis,* thinly clad with short hair inside and out, and with a tuft of long hair on the anterior inner margin near the base.

Whiskers dark brown, a few of the lower grey, the longest extending to the ears, but not beyond.

Feet small; claws white, compressed, moderate in length, only partly overhung by hairs, which do not extend to the end. In the fore foot the thumb is quite rudimentary, but it has a small claw. Third finger very little longer than the fourth, which exceeds the second; pads five, three in a triangle at the base of the middle toes, two opposite to each other and to the base of the thumb. In the hind foot the middle toe is the longest, as usual, the second and fourth very little shorter and subequal; there is a great difference between the second and fifth toe, less between the fifth and first. Five pads on the sole, besides a rudimentary sixth; of the two anterior pairs the outer is a little more distal than the inner, and the rudimentary sixth pad is equally in advance of the fifth, which is a little nearer to the origin of the middle toe than to the heel.

Tail rather more than one third the length of the head and body, slightly attenuate, covered with short hairs that project very little beyond the end.

The following dimensions are taken from three specimens in spirit in the Museum at the Jardin des Plantes, Paris; (1) is a male and (2) a female from Moupin, (3) a female from Fokien :—

	(1) in.	(2) in.	(3) in.
Length of head and body from nose to vent...	3·7	3·55	3·7
,, tail from vent (hairs at end not included)	1·4	1·35	1·6
Height of ear from orifice..............................	0·37	0·38	0·35
Breadth of ear	0·35	0·36	0·35
Length of fore foot (palma) without claws ..	0·35	0·34	0·35
,, hind foot from heel without claws ...	0·6	0·6	0·65

The incisors are deep orange. The following are the characters of the molar teeth :—

Upper molar I,	6 spaces,	3 external and	4 internal angles.
,, ,, II,	5 ,,	3 ,,	3 ,, ,,
,, ,, III,	4 ,,	3 or 4 ,,	3 or 4 ,, ,,
Lower molar I,	6 to 8	5 ,,	5 or 6 ,, ,,
,, ,, II,	3 ,,	3 ,,	3 ,, ,,
,, ,, III,	3 ,,	3 ,,	3 ,, ,,

As was remarked by Milne-Edwards in his original description of this form, the spaces on the two sides of many of the teeth are so nearly opposite that they must often be reckoned as one; and as there is some variation in the degree of alternation or coincidence, the number of spaces is not characteristic. This is especially the case in the anterior lower molar. In the first upper molar spaces 5 and 6 coalesce. The last interior angle is frequently equal to the others, but is more commonly smaller. In the second upper molar the second and third spaces are imperfectly separated, and so are the fourth and fifth; sometimes the tooth might be considered as having only three spaces. The last inner angle varies in size, but is usually equal or nearly equal to the next in front. In the last tooth the second and third spaces are not distinct; the posterior portion of the tooth varies, generally (as in the example figured herewith) there is a strong third angle inside, and another equally strong (the third) outside, and behind these is a U-shaped lobe with a weak external angle. Sometimes, however, the latter angle is wanting, whilst occasionally, on the other hand, a fourth internal angle is also well developed, as in *A. sikimensis;* and in one specimen this is stronger than the corresponding inner angle.

The anterior lower tooth also varies considerably. The angles on opposite sides are sometimes so perfectly parallel in position that there are only six spaces, the first and second being always imperfectly separated. The anterior inner angle too is very variable, being sometimes as strong as in *A. sikimensis*, sometimes altogether wanting.

The following are the dimensions of a skull:—

		inch.
Length from occipital plane to end of nasals	...	0·9
Breadth across hinder part of zygomatic arches	...	0·56
„ between orbits	...	0·19
Length of nasal suture	...	0·24
Breadth of interparietal	...	0·33
Length of upper molars	...	0·22
Distance between upper molars and incisors	...	0·25
Length of lower jaw from angle to symphysis	...	0·55
„ „ molars	...	0·24

The interparietal is generally more or less pentagonal, the lateral extremities being usually truncated, though occasionally angulate or subangulate. The posterior edge is usually nearly straight, sometimes convex, the two anterior edges very little concave, and the anterior angle very slightly projecting. The nasals diminish regularly in breadth behind.

Besides the original examples from Moupin and Western Sechuen, specimens have been sent to the Paris Museum from the western part of the province of Fokien, the South-western China.

This species is undoubtedly very close to *A. sikimensis*, from which it is only distinguished by its shorter ears and feet, the characters of the teeth not being sufficiently constant to serve as a satisfactory distinction. It is far from improbable that intermediate forms may exist in the Bhutan and the other Eastern Himalayan tracts intervening between Sikkim and Moupin.

The following Indian and Himalayan rats and mice have been incorrectly referred to the genus *Arvicola* :—

Arvicola indica, Gray and Hardwicke, Illustrations of Indian Zoology, I, pl. 11 ; = *Mus* (*Nesokia*) *hardwickii*.

Arvicola bengalensis, Gray and Hardwicke, Illustrations of Indian Zoology, II, pl. 21 ; = *Mus* (*Nesokia*) *bengalensis*, [= *Nesokia indica*, Blyth and Jerdon ; *Mus* (*Nesokia*) *blythianus*, Anderson.]

"*Arvicola ? Neotoma*, two sp. n., *pyctorhis* and *myothrix*, nob.," Hodgson, J. A. S. B., 1841, X, p. 915.

"*Arvicola ? myothrix*, Hodgson," Horsfield, P. Z. S., 1856, p. 401.

These are the species very imperfectly described by Hodgson (Ann. & Mag. Nat. Hist. 1845, XV, p. 267) as *Mus ? pyctorhis* and *Mus ? myothrix*. The former proves, on an examination of the type in the British Museum by Mr. Thomas, to have been founded on an aberrant individual of the common house and tree-rat of India (*Mus rufescens* auctt.), and belongs to the form called *Mus æquicaudalis* by Hodgson. The type of *Mus myothrix* is a skin without any skull ; but I have no hesitation in identifying it with *Golunda ellioti*, to which an affinity was suggested by Jerdon ('Mammals of India,' p. 214).

"*Arvicola ? hydrophilus*, Hodgson," Gray, List of the Specimens of Mammalia in the British Museum, 1843, p. 119.

This is *Mus ? hydrophilus*, Hodgson, Ann. & Mag. Nat. Hist. 1845, XV, p. 267. No original type can be found, and it is quite uncertain what the species is. Mr. Thomas has endeavoured to identify it, but in vain. The figure in Hodgson's drawings shows a large mouse or small rat with a pure white belly, and might well be taken from a young individual of the common white-bellied Himalayan rat, *Mus nitidus* (= *Mus rufescens*, var.), or of *Mus jerdoni* (*Leggada jerdoni*, Blyth : this species is not a true *Leggada*).

NOTE.—The teeth figured in the accompanying plates are those of the right upper and right lower jaw, the anterior extremity uppermost, and the upper jaw teeth above the lower. It results from this arrangement that in the upper figures (upper teeth) the outer or external angles are to the left, the inner to the right ; whilst in the lower figures (lower jaw) the reverse is the case, the outer side of the jaw being to the right, the inner to the left. All the figures are enlarged 8 diameters.

X.—*On* Myospalax fuscicapillus, *Blyth.*—*By* W. T. BLANFORD, F. R. S., &c.

[Received May 8th;—Read June 1st, 1881.]

(With Plate II, in part.)

Forty years ago, some specimens of a rodent in the Society's collection were named by Mr. Blyth *Georychus fuscocapillus*. It was not known at the time whence they were procured, but Mr. Blyth supposed that they came from the Himalayas. The first mention of the name was in 1841,* in a list of specimens of skulls, and in the following year, a very brief and imperfect description of the animal was given.

No fuller account of the species was ever published. The true locality, Quetta, appears to have been ascertained by the late Captain Hutton, the animal was noticed and a short description of its habits given in his "Rough notes on the Zoology of Candahar" (J. A. S. B., XV, p. 141.) It was in this paper that the new generic name *Myospalax* appears to have been proposed for the first time: in a footnote, Mr. Blyth states that "this type differs from *Myodes* or the Lemming genus in the much greater size and strength of the feet, in the elongation and protrusion of its upper incisive tusks, &c., and he adds that he will describe the form more particularly, together with some other new rodents. That such was his intention is apparent also from a letter to the Honorary Secretary published in the preceding volume of the Society's Journal,† in which Mr. Blyth requests that a figure of the animal and its skull might be prepared for publication. The request was granted, but apparently the plate was never drawn, it was certainly, so far as I am aware, never published. In Mr. Blyth's Catalogue of the Mammalia, the specimens in the Society's collection are recorded with references to all the accounts above noticed.‡ So far as I am aware the animal has never been mentioned in European works,§ probably because the first brief notice escaped record in Wiegmann's Archiv.

Recently, when occupied in determining the *Arvicolæ* of the Himalayas, my attention was called to a specimen, brought by Mr. Griffith from Afghanistan, that had long been in the old East India Company's Museum and had finally been transferred to the British Museum. This proved to be a true *Arvicola* (see previous paper) but in external characters it had some resemblance to *Myospalax fuscicapillus*, of which I had a distinct recollection. On my application, Dr. Anderson, Superintendent of the Indian Museum, was good enough to obtain the permission of the Trustees to send one of the specimens of Blyth's species and a skull to London for me to examine. After comparing this with, Mr. Thomas's assistance, I am unable to find that the animal has ever been described elsewhere, and the most nearly allied known form appears to be the Russian *Ellobius talpinus.* I cannot find any good generic character to distinguish *Myospalax* from *Ellobius,* although the difference between the two is considerable, and may induce some naturalists to separate them generically. For the present, I think the Quetta species may be called *Ellobius fuscicapillus* the following is a description of the skin and skull, which, with the teeth, is figured on Pl. II.

---

* For references see synonymy.

† J. A. S. B., XIV, Proc. Oct. 1845, p. ciii.

‡ There is also a brief allusion to this species by Mr. Blyth in 1863, J. A. S. B., XXXII, p. 89.

§ The same name *Myospalax* was subsequently used by Brandt, (Mem. Acad. St. Petersburg 1855, IX, and by Carus and Gerstaecker, (Handbuch der Zoologie, 1875, p. 108,) for the genus *Siphneus*, the type of which was named *Mus myospalax* by Laxmann in 1773. See A. Milne-Edwards, Rech. Mamm. pp. 71, &c.

ELLOBIUS FUSCICAPILLUS.

Georychus fuscocapillus, Blyth, J. A. S. B., 1841, X, p. 928; 1842, XI, p. 887.

Myospalax fuscocapillus, Blyth, J. A. S. B., 1846, XV, p. 141; Cat Mam. Mus. As. Soc. p. 126.

Colour on the upper parts buff, (very pale fulvous or light brownish yellow;) except on the upper surface of the head, which is hair brown. Lower parts rather paler, tail nearly the same colour as the back, feet pale.

Fur soft, light ashy grey at the base, and for rather more than half the length, terminal portion on the back dirty light brownish yellow, no longer hairs on the back, a few towards the rump, and around the base of the tail; these have not dark tips. On the head the hairs are brown throughout, in the middle of the belly yellowish white. The hair on the specimen examined is short, being only $\frac{4}{10}$ inch long, in the middle of the back.

Ear-conch rudimentary.

Whiskers buff, the uppermost brown, none in the skin examined extends back beyond the ears.

Feet of moderate size, rather broad, toes long, claws blunt, short, formed for digging, horn-coloured, overhung by long hairs. In the forefoot the second is but little shorter than the third but considerably longer than the fourth, exceeding it by about the same amount as that by which the fourth itself extends beyond the fifth; thumb very short, but with a claw nearly equal to that of the other toes. Pads beneath each fore foot 5 in number, the two anterior at the base of the three middle toes, of these the outer appears to be double, (it is difficult to be certain of the characters in a dried specimen;) the third is inside the base of the 5th toe, the two posterior tubercles are considerably larger than the rest and the inner is rather more distal than the outer. On the hind foot the second toe is nearly as long as the third and considerably longer than the fourth, exceeding it by nearly the same amount as the fourth itself extends beyond the first, which again is but little longer than the fifth. There are 6 distinct pads or tubercles beneath the hind foot, arranged in 3 pairs as usual, the inner pad of the second pair, at the base of the first toe, appears to be double, those forming the proximal pair are nearly opposite to each other and are rather nearer to the anterior pair than to the heel. The whole planta to the heel is naked, though there are long hairs on the sides of the feet.

Tail very short, thinly clad with long light yellowish brown hair, that extends $\frac{4}{10}$ inch beyond the end.

The following are the dimensions *of the dried skin.*

	inches.
Length nose to rump	5.
,, tail, without hair at end	0·35
,, forefoot without claws	0·67
,, middle toe ditto	0·28
,, hindfoot from heel ditto	0·85
,, middle toe ditto	0·25

The *skull* is that of an aged individual the occipital crest is very strongly developed and the sutures too fully anchylosed for the shape of the interparietal to be distinguished. The cranium is not quite perfect, the parts around the *foramen magnum*, including the auditory bullæ, having been cut away. Compared with the skulls of *Arvicola*, the most striking differences are the greater thickness of all the bones, the much greater development of the occipital crest, of the zygomatic arch, and of the bones of the anterior or facial portion generally, as compared to the brain case. The measurements are:—

	inch.	met.
Length from middle of occipital plane to end of nasals	1·34	·0345
,, from paroccipital process to front of incisors	1·62	·041
,, of suture between nasals	0·47	·012
Breadth across hinder part of zygomatic arches	1·1	·028
,, across brain pan behind zygomatic process of squamosal	0·6	·015
,, across frontals where narrowest between orbits	0·23	·006
Length of row of upper molars (crowns only)	0·32	·008
Distance from anterior end of upper molar to base of incisors	0·55	·014
Length of anterior palatine foramina................................	0·14	·0035

Length from base of incisors to posterior termination of palate	0·9	·023
Breadth of bony palate between front lobes of anterior molars	0·13	·0035
Length of lower jaw from angle to symphysis	1·12	·028
Height of ditto to end of coronoid process	0·6	·015
Length of row of lower molars	0·32	·008

The occipital plane slopes backwards. The upper surface of the skull is rounded and slopes away more rapidly at the sides than in *Ellobius talpinus* or in *Arvicola*, the sagittal crest is strong posteriorly, but sinks down in front. The nasals are nearly of the shape of a wine bottle with concave sides, the posterior termination is not pointed but truncated by the irregular zigzag suture, the outer margins are straight and nearly parallel for a short distance from the posterior end, then convex, and again in front slightly concave. The premaxillæ extend further back than usual on the upper surface of the skull, and terminate posteriorly in points some distance behind both the end of the nasals and the origin of the zygomatic process of the maxilla. The zygomatic arch is very high in the middle and presents the peculiarity of the maxillar and squamosal processes meeting along the lower edge and forming a suture; the malar, a high but short bone, does not extend to the lower margin, nearly two-thirds of the length of which is composed of the maxillar process. The infraorbital foramen is large, triangular when received from the front, not produced in the form of a narrow slit below, and about one and a half times as high as broad.

The anterior palatine foramina are very small and narrow, the posterior palatine foramina are numerous, relatively large, and situated in two deep grooves, occupying the greater part of the palate posteriorly. The opening of posterior nares is very narrow, much narrower than each of the broad pterygoid fossæ.

Teeth. The incisors are long and project forward considerably in both jaws, those in the upper jaw are of moderate breadth and flat in front; lower incisors narrower, and rounded in front. They are nearly white in both jaws.

The row of upper molars is very slightly curved; all the teeth are of nearly equal breadth. The first upper molar has 3 external and 3 internal angles, the internal (those to the right in the figure) being rather anterior to the external. The slope from the hinder angle on each side to the posterior extremity of the tooth is concave, especially on the external side. The second tooth has 3 subequal angles outside and terminates posteriorly in a rudimentary angle in contact with the hinder molars; on the inside there are 3 angles first a small angle, then a larger one, there being no distinct re-entering angle between the two, the re-entering angles between the second and third inner angles, and between the last and the first of the hinder tooth are square, not pointed. The third tooth has 3 outer and 2 inner angles, the outer are nearly equi distant, but there is no re-entering angle between the first and second, though there is between the second and third, the posterior termination of the tooth is a very slightly projecting rounded lobe, and it may be noted that each of the upper molars terminates in a somewhat similar lobe, as in *Arvicola*.

In the first lower molar there are 4 outer and 5 inner angles, the first on each side rounded and less prominent than the others, the two hinder pairs on opposite sides of the tooth nearly opposite to each other; the anterior extremity is a rounded lobe, nearly as broad as long, with a very blunt rounded angle inside, in advance of a still blunter one outside. The second and third lower molars have each 3 angles on each side, all nearly opposite to each other, the outer (those to the right in the figure) being in each case a little in advance of the inner. In the second molar the angles inside and outside are nearly equal to each other, in the posterior molar the inner angles are stronger than the outer, and the first outer angle is less prominent than the other two.

The lower jaw is strong, the coronoid process well developed, the tubercular projection corresponding to the posterior extremity of the lower incisor situated just outside and a little below the condyle, so as to make the latter appear almost double.

Compared with *Ellobius talpinus*, the differences presented by the form here described are numerous, but the external distinctions are less striking than those shewn by the skull. *E. fuscicapillus* is larger, yellower, and rather paler-coloured, and the tail appears a little longer. The base of the fur is much paler, that of *E. talpinus* being almost black, that of *E. fuscicapillus* light grey. There are some slight differences too in the feet, *e. g.*, the second toe of the fore foot in *E. talpinus* appears to be much shorter in proportion to the middle toe than in *E. fuscicapillus*. The feet too appear larger in the latter but it must be remembered that the comparison is made between dried skins.

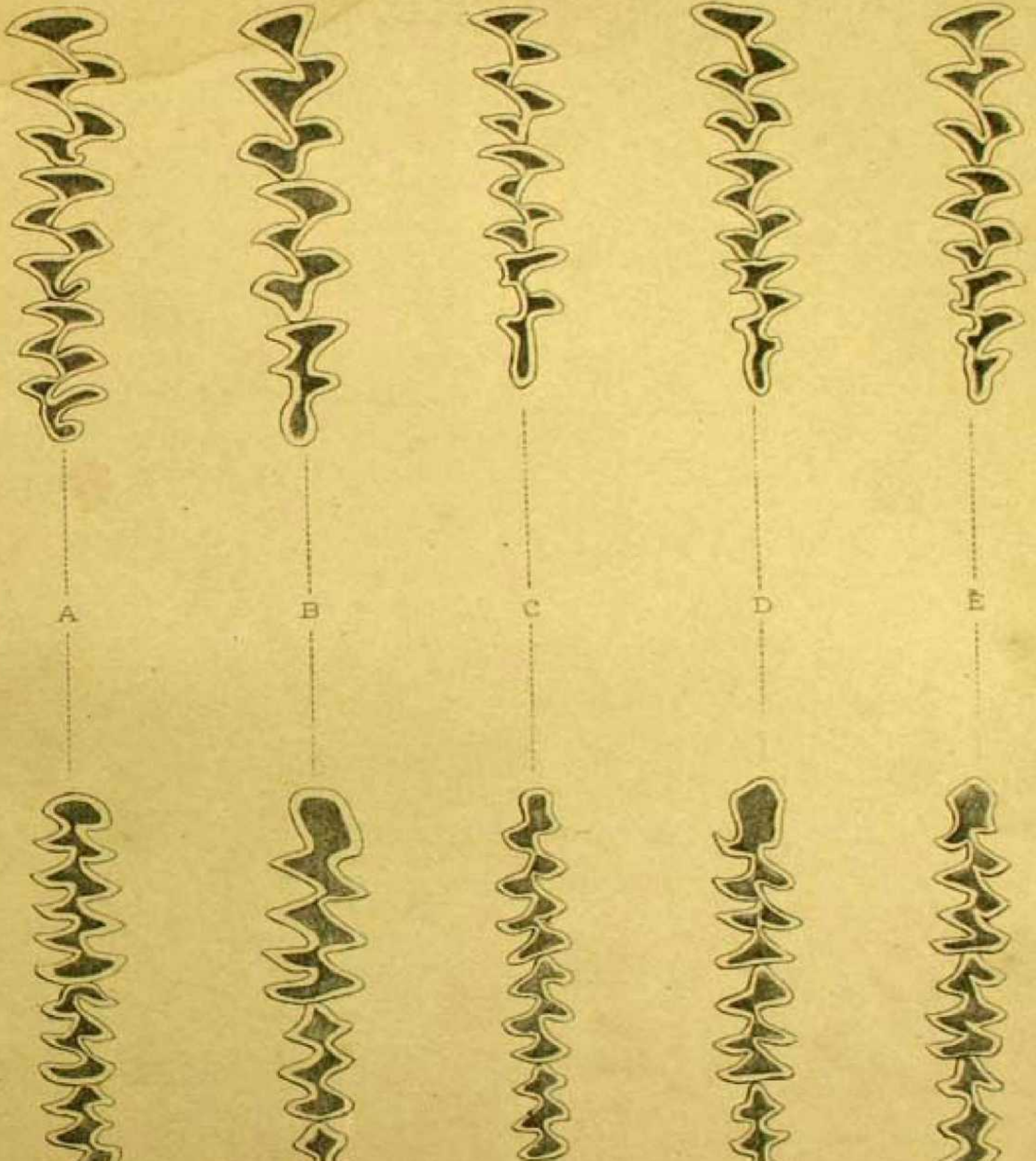
The hinder upper molar in *E. talpinus* is proportionately much shorter, the two anterior outer angles are close together, and the posterior lobe behind the hindmost outer angle is wanting. The second inner angle too is ill developed or obsolete. In the first tooth of the lower jaw there are only 3 distinct external and 4 internal angles, instead of 4 and 5, and the anterior lobe is very slightly developed.

The skulls of *E. talpinus* in the British Museum (two in number) differ greatly in form from that of *E. fuscicapillus* and are much more Arvicoline, the facial bones being far less developed in proportion to the brain case, and the occipital crest very small. The zygomatic arch is less high but similar in form and in the arrangement of the bones, the maxillar process, however, is not quite in contact with that of the squamosal although the two approach each other very closely. The nasals have not the peculiar form that they have in *E. fuscicapillus*, but are simply arcuate or convex externally, and the præmaxillæ terminate posteriorly opposite the end of the nasals and the origin of the zygomatic arch. The anterior palatine foramina, though small are not quite so minute as in the Quetta species, and the posterior portion of the palate is less deeply grooved. The posterior nares and pterygoid fossæ are similarly shaped. In the lower jaw the coronoid process is shorter, and the angle is differently shaped, but the peculiar condyle is precisely similar, the tubercle at the root of the incisor being just outside and below in both species.

It is evident that if, as I believe, *E. fuscicapillus* belongs to the genus *Ellobius*, the short description of that genus by Alston in his classification of the order *Glires** will need some modification, since the skull in the species now described is not very like that of *Arvicola* and the facial portion is more developed instead of less.

* P. Z. S., 1876, p. 85.

W. T. BLANFORD, Journ. As. Soc. Bengal, Vol. L. Pt. II 1881. Pl. I.

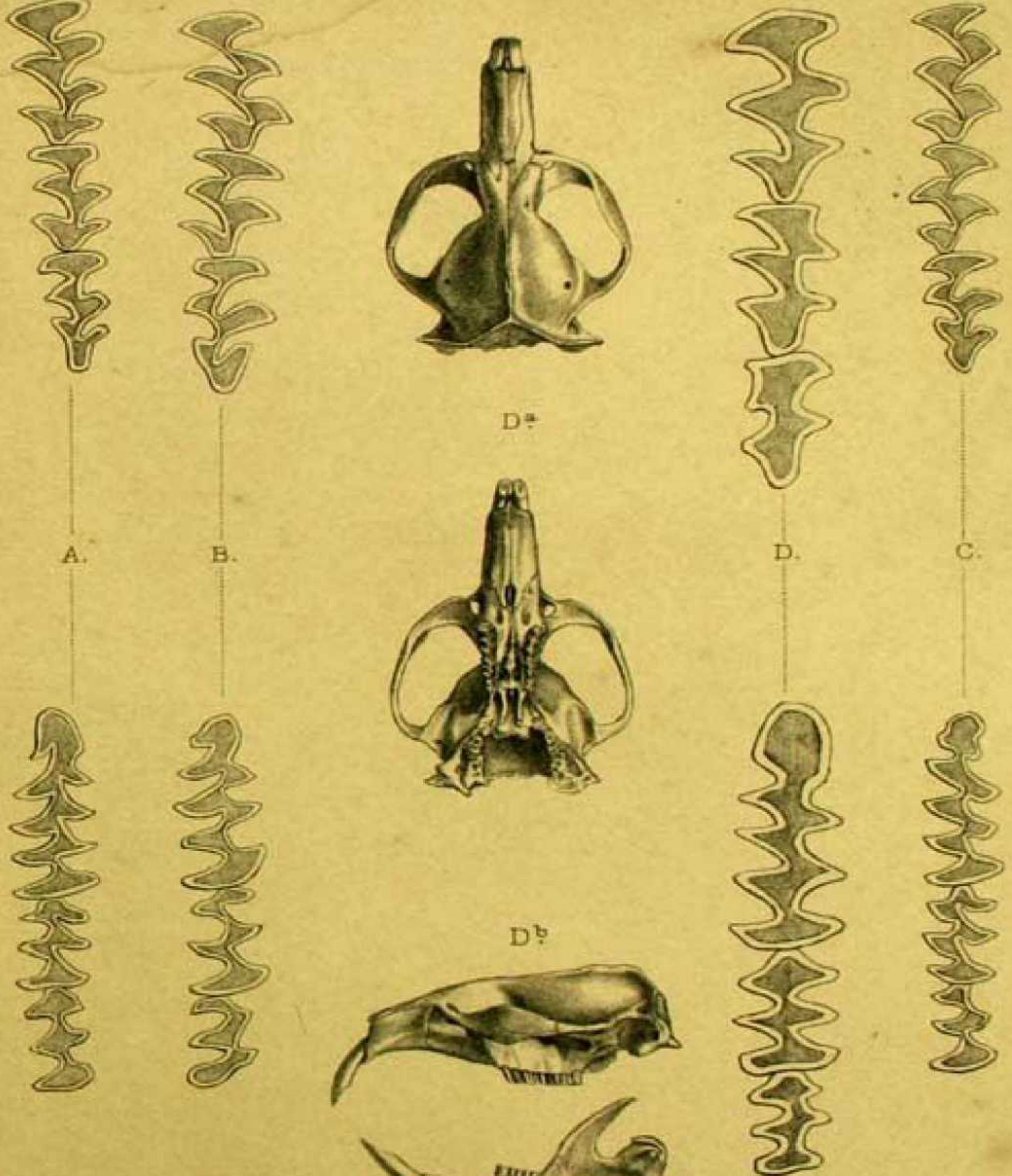


Eden Wilson del et lith.

Mintern Bros. imp.

A. Arvicola sikkimensis.
B. A. wynnei.
C. A. stracheyi.
D. A. roylei.
E. A. blanfordi.

W. T. BLANFORD. Journ. As. Soc. Bengal. Vol. L. Pt II. 1881. Pl. II.



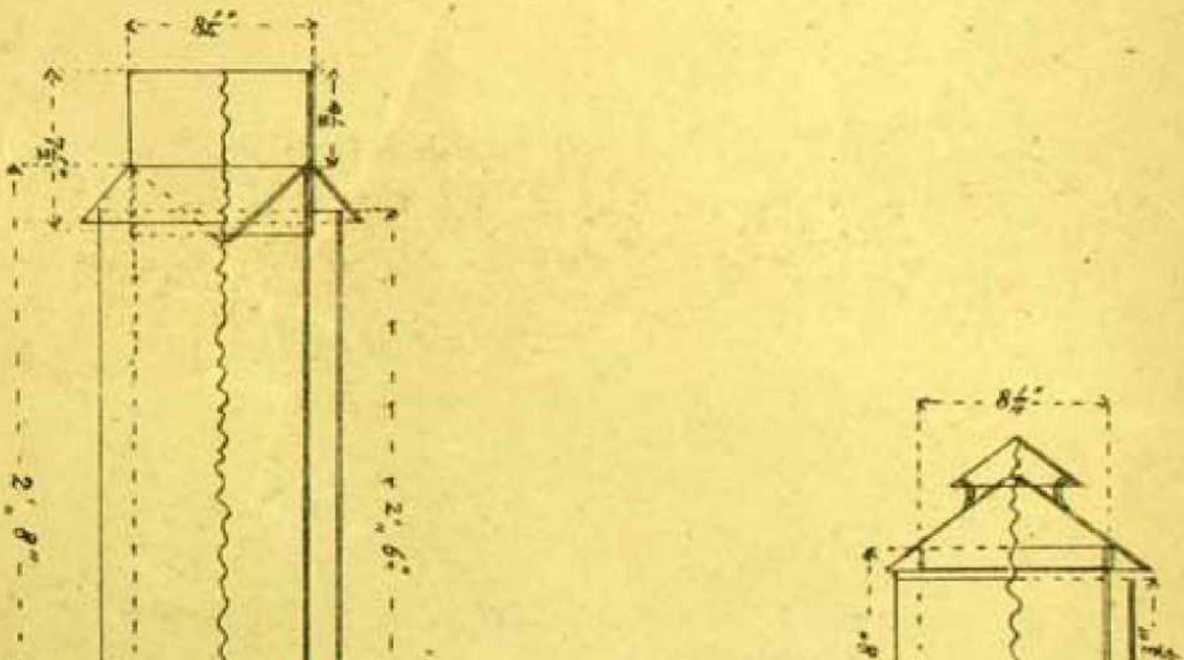
Edwin Wilson del et lith.

Mintern Bros, imp.

A. Arvicola melanogaster.
B. A. blythi.
C. A. mandarinus.
D. Ellobius fuscicapillus.

ELEVATION AND SECTION

of a Raingauge-evapometer for remote and secluded Stations.



Scale of one inch to the foot.

ZINCOGRAPHED AT THE SURVEYOR GENERAL'S OFFICE, CALCUTTA.

JOURNAL
OF THE
ASIATIC SOCIETY OF BENGAL.

◆

Part II.—PHYSICAL SCIENCE.

No. III.—1881.

XI.—*New or little-known* Mollusca *of the Indo-Malayan Fauna.*

By GEOFFREY NEVILL, C. M. Z. S.

[Received 30th June;—Read 6th July, 1881.]

(With Plates V, VI, & VII.)

Mr. A. R. Wallace in his very interesting new work—'Island Life'—devotes a chapter to the Madagascar Group, and he comes to the conclusion that the presence there of the numerous and important Indo-Malayan forms cannot be accounted for by a former continental land connection, for which the term "Lemuria" has been suggested by an eminent zoologist. If I understand rightly, the distinguished author accounts for the presence of these forms by their introduction from Europe, and from consequently Asia, before the separation of Africa by the sea in early Tertiary times; in another passage, he suggests the probable submergence of many large islands, whose former position is indicated at the present time by the banks and reefs of the Cargados, Chagos, Maldives, &c., to account for the "transmission of organisms from the Indian Peninsula."

As Mr. Wallace twice alludes to my papers on the Mollusca of the Seychelle Islands (pp. 405 and 415), which I wrote so long ago as 1868-9, I now wish to add a few remarks. Speaking solely from the conchological point of view, I would submit that there is certainly no necessity for presuming the existence of a continent, "Lemuria;" on the contrary, an archipelago, thickly studded with large islands, such as appears to be unmistakeably indicated in this region, presents several points of greater probability judging from the character of the existing landshells, and I would question the former immediate land connection with the Indian Peninsula. I think I can point out several remarkable features, which tend to show that this archipelago probably received its Mollusca rather by a close connection with the Nicobars, Sumatra, Java, &c., and thus of course with the Malayan Peninsula. It is scarcely necessary for me to mention that the Mollusca of the Madagascar and Mascarene province give no support to the theory of an ancient emigration from Europe, so few fossil landshells of pretertiary times being known; the entire absence of the genus *Helicina* from the tertiary deposits of Europe as also from India proper and Ceylon at the present time, I consider very significant, as the genus from its well-marked characters, its robust substance, and local abundance could hardly have escaped attention. I showed in 1869 that the Seychelles possess a species (*H. theobaldiana*, Nevill) only just separable from others found in the Nicobars and adjoining Islands; M. Morelet again has lately described a most remarkable extinct subfossil form from Mauritius as *Helicina undulata:* this species is closely allied to the *Trochatella mouhoti* of Pfeiffer from Cambodia, which, Dr. Dohrn has justly shown, cannot be classed with the West Indian species of *Trochatella*, but must be referred to *Helicina;* for these two species I suggest the new subgeneric division ***Pseudotrochatella****;* the group has its nearest known allies in some Philippine forms. It will be important to endeavour to find out whether there are any fossil or subfossil forms of *Helicina* to be found in Madagascar itself. The remarkable "Malagash" section of *Megalomastoma*, called *Hainesia* by Pfeiffer (= *Mascaria*, Angas), seems to me much more closely allied to the Malayan and Philippine section *Coptocheilus* of Gould than with the extinct European Tertiary forms.

Omphalotropis is undoubtedly a most significant feature of the shell-fauna of the Mascarene Islands, the genus not being known from Madagascar, the Comoro, or Seychelle Islands; it has also never been established as found fossil in Europe, or living in India or Ceylon; there is, however, one tertiary fossil to which I would call the attention of conchologists—the *Cardiostoma trochulus* of Sandberger ('Vorwelt,' pl. XII, fig. 8), which I consider perhaps referable to *Omphalotropis?* Besides the Mascarene Group, the genus is found in great abundance and variety in the Polynesian Archipelago and can, according to my theory, be fairly traced from the one region to the other. Excluding the allied New-Zealand genus *Realea*, several species have been described from New Caledonia, one from the Solomon Islands, two from Ceram, one from Shanghai, one (*O. strictus* of Gould from the Loo Choo Islands) has been lately rediscovered by Surgeon-Major R. Hungerford at Hongkong living on stone walls at 300 feet above the sea, two from Borneo, one from Amboyna, one from the New Hebrides, one from the Pelew Islands, three from the Nicobars, and two (possibly more) from the Andamans. I can scarcely believe the genus does not occur in Sumatra or Java, though it has not yet been recorded from either, or indeed from the Malayan Peninsula.

Another remarkable "Indian" type is the *Cyathopoma blanfordi*, H. Adams, which was first discovered by myself at a considerable elevation on Mahé one of the Seychelles. This is undoubtedly an exception to my theory that the "Indian" forms of the Madagascar province show a closer connection with Sumatra, &c. than with India proper: species of *Cyathopoma* (*sensu lato*) being numerous in South India and Ceylon, and also existing on the Bombay and Golconda Hills, as well as at Darjiling, in Assam, and a single species, (fide cl. Theobald) in the Shan States; the genus hitherto not being known from any other region. But elsewhere in this paper I have endeavoured to prove that the genus *Diadema* of Pease from the Pacific Archipelago is not really separable, and I can also confirm the validity of Benson's species *Cyathopoma tignarium* from the Andamans, which Mr. W. T. Blanford has lately called in question, as I have received several living specimens from my energetic correspondent Mr. F. A. de Roepstorff, who has also sent me a single specimen of the true *Omphalotropis distermina*, Benson, as justly discriminated from its much commoner ally by Mr. Blanford, who has named the latter *O. andersoni*. The occurrence of *Cyathopoma procerum*, Blanford, at Beypore, close to the sea, is also worthy of note, in regard to the geographical distribution of the genus.

As well as I can judge, there is no fossil represented in Sandberger's 'Vorwelt,' which presents any resemblance to *Cyathopoma*. The genus is of such small size that it may have been easily overlooked hitherto in the Malayan province;—Blanford's genus *Cyclotopsis*, I consider as on an altogether different footing; I regard it as a strictly African genus, of which two species have made their way to India, two others to the Comoro Islands, and one (*C. conoideum*, Pfeiffer) to Mauritius; Sowerby's habitat "Seychelles" for this last is undoubtedly erroneous and should be altogether ignored. The two large Seychelle species of *Stylodon* (*Helix*) have their nearest ally in *H. cepoides*, Lea, of the Philippines, and are all three evidently allied to the species of *Phania*, Albers (*pars* = *Eucochlias*, Theobald), of which forms are known from Formosa (*H. swinhoei*), Tavoy (*H. saturnia*), Solomon Island, Cambodia, Moluccas, Khasi Hills, &c.

Mr. Wallace in Vol. II, p. 538, of his 'Geographical Distribution of Animals,' 1876, Prof. Sandberger in his 'Land &c. Conchylien der Vorwelt,' and Prof. A. Nicholson in his 'Manual of Palæontology,' 1879, have all omitted to take cognizance of the four highly interesting and important species of fossil *Helix* described by Dr. Stoliczka in his Cretaceous Fauna of South India, Vol. II, 1867, three as species of *Anchistoma*, Klein (more correctly *Gonostoma*, Helder) and one as a species of *Macrocyclis*, Beck.

All of the above works therefore must be amended, to the effect that indubitable species of true *Helix* are known from the Upper Cretaceous. I have carefully examined all the specimens of these Cretaceous *Helicidae*, so excellently figured by Dr. Stoliczka, and am of opinion he was quite right in referring three of the species to the subgenus *Gonostoma* (= *Anchistoma*), and I think it will interest Mons. Bourguignat and other conchologists to find the ancestors of this, both in tertiary and recent times, essentially European group, in so ancient a geological formation as that of the Cretaceous rocks of South India. I consider Dr. Stoliczka to have been less happy in his remarks as to the affinity of these forms with our present Indian subgenera *Plectopylis* and *Corilla*, which seem to me entirely different groups. The fourth of these Cretaceous forms, the *Macrocyclis carnatica* of Stoliczka, is certainly not a species of true *Macrocyclis*, the type species of which is the South American *H. laxata*, Fér., now said by Mons. Fischer to form a section of typical *Helix*. Dr. Stoliczka's species evidently belongs to what is now known as *Patula*, Helder, but to which of the sections, it is impossible to say until better specimens are forthcoming.

In addition to the above recorded instances of landshells of proved greater antiquity than the Tertiary Period, I am indebted to Dr. Feistmantel for pointing out that three well preserved species have been described from the Coal Measures of Nova Scotia by Dr. Dawson, *Dawsonella meeki*, *Zonites* (*Conulus*) *priscus*, and *Pupa* (*Dendropupa*) *vetusta* (from "the hollow trunk of an erect Sigillaria"), copies of the figures of the two latter being given in Nicholson's Manual; these are doubtless the forms of *Helicidae* alluded to by Wallace in his above quoted work from the Carboniferous? Dr. Stoliczka, *l. c.*, page 6, also writes "Except the *Boysia Reussii*, which was in 1859 described by myself from a Cretaceous freshwater deposit in the North-Eastern Alps, I am not aware that any species of true *Helicidae* have been noticed from deposits lower than the Eocene strata." Pfeiffer does not record this so-called *Boysia*, nor indeed any of the above-mentioned Cretaceous Helices; it is, however, a very well characterized form, I should consider from the figure, possibly correctly referred to *Boysia*; it was found in tolerable abundance and is well figured in the Sitz. K. Ak. Wien, XXXVIII, 1859. This *Boysia reussii* has been latterly referred by Professor Sandberger to the genus *Strophostoma*, Deshayes, and is consequently mentioned as the most ancient species as yet discovered of the *Cyclostomacea*, in his magnificent work, insufficiently studied by Conchologists, on the Land und Süsswasser Conchylien der Vorwelt, 1870-5.

HELICARION [AUSTENIA] MAGNIFICUS, G.-Austen and Nevill, Pl. V, Fig. 23.

Nevill, J. A. S. B., 1877, Momein [Yunnan], p. 24, diam. 46, axis 11½ mil., as *Helicarion magnificus*, "coll. J. Anderson"; Nevill, Handlist I, 1878, p. 16, as *Helicarion* [*Austenia*] *magnificus*; Godwin-Austen, P. Zool. S. 1880, as *Girasia magnifica*.

I am quite unable to agree with Colonel Godwin-Austen, in referring this species to *Girasia*; if I were persuaded that it was the case, I should not hesitate in uniting *Girasia* and *Austenia*. However, I consider both well characterized, if not as distinct genera, at least as well marked sections of *Helicarion*, not only as regards their shells but also on account of the differences in the animals themselves. *Austenia* has a less "helicoid" and more "slug-like" shell than true *Helicarion*, but is still always distinctly convoluted and of firm though fragile texture. Pfeiffer and the old school would have called them *Vitrina*. *Girasia* has merely a membranaceous shell scarcely if at all convoluted, more or less rudimentary; old authors considered them as "slugs" and not as *Helicidae* at all.

HELICARION [AUSTENIA] RESPLENDENS, Nevill, Pl. V, Fig. 24.

J. A. S. B., 1877, Sawady and Bhamó, coll. J. Anderson, M. D.

GIBBUS LYONETIANUS, Pallas.

Spicil. Zool. 1780, as *Helix lyonetiana*.

Besides the typical specimens which I have already recorded in my 'Handlist of Mollusca in the Indian Museum,' the following forms seem worthy of record:—

var. ANTONI, Pfeiffer.

Zeits. Mal. 1847, as *Gibbus antoni*, from Mauritius [not *Pupa antoni*, Küster, 1844, from Berbice]; = *Pupa grateloupiana*, Pfr. 1868, from Mauritius.

There are two specimens in the Museum, collected by myself in the "Bois Sec," Savanne District, Mauritius. The above local name in my 'Handlist' was unfortunately changed, during my absence on furlough in Europe, to "Dry Forest," a name of no meaning!

var. SINISTRORSA, nov.

In 1878 I noticed a reversed specimen in the museum at Lyons; shortly afterwards I was fortunately successful in purchasing a second specimen for the Indian Museum, out of the collection of the late Lombe Taylor.

GIBBUS DUPONTIANUS, G. Nevill, Pl. VI, Fig. 1.

J. A. S. Beng., 1870, p. 411, and *l. c.*, 1871, p. 7, also Handlist p. 9, [sine descr.]; P. Zool. S. 1868, p 260, animal described as that of "*G. versipolis*"; = *P. versipolis*, Pfr. var. [not of Férussac].

T. aperte rimata, subcylindrica, sat solidiuscula, flavido-cornea, oblique confertim fortiter sulcata, costis latis, flexuosis; spira cylindrica, in conum perobtusum terminata; anfr. 7, *convexiusculi, ultimus precedentibus vix major; apertura subverticalis, ovalis, sine dente parietali; perist. late expansum, pallide luteum, marginibus callo lævi junctis.*

Long. 14½, diam. 6¾ mil. Savanne District, Mauritius.

The number of whorls, different sculpture, absence of parietal tooth, light yellow colouration, &c., easily distinguish this species from its nearest ally *G. bacillus*, Pfr.; the animal is also different, as can be seen by reference to the Proc. Zool. Soc. 1868, p. 259 and 260 (*G. bacillus* and *G. versipolis*); it is perhaps Pfeiffer's Mauritian variety of *P. versipolis*, but is certainly not Férussac's species from Bourbon (= *P. funicula*, Val.), as already pointed out by M. Morelet and myself.

ENNEA (HUTTONELLA) MOERCHIANA, Roepstorff, MS.

Deeply, openly umbilicate, the umbilicus partly covered by the deflected last whorl; cylindrically ovate in shape, almost exactly like a gigantic *E. stenopylis;* arcuately ribbed, ribs thick and rather distant; white, solid, with obtusely conoidal apex and distinct suture; whorls 6½, convexly tumid, narrow, the 4th and 5th of equal breadth, the last not so broad and very little higher, rounded at base and brought round in front, so as to bring the aperture almost into the centre, or axis, of the shell, much as in *E. stenopylis*, thus partially covering the umbilicus; aperture vertical, contracted, quadrate, peristome anteriorly strongly sinuate, then very broadly reflected, quite straight, not oblique as in its ally, the columellar and basal margins more broadly reflected and boldly, evenly rounded instead of the former being nearly perpendicular as in *E. stenopylis*, margins joined with a callosity, nearly straight, in the centre provided with a well developed prominent, perpendicular tooth (or fold), another strong, but less prominent fold within the outer lip, at base of the above mentioned "sinus," that is where the peristome becomes markedly reflected, behind which there are some ten ribs so closely crowded together as to give almost the appearance of one very broad "varex," these ribs partially block up the umbilicus.

Long. (vix) 5, diam. max. 2¾ mil.

I have much pleasure in adopting, for this remarkable form, Mr. de Roepstorff's MS. name in honour of his late friend Dr. Moerch of Copenhagen, who contributed several excellent papers towards our knowledge of the Mollusca of the Nicobars.

Type, Indian Museum; centre of Great Nicobar, coll. F. A. de Roepstorff, Esq.

Genus NANINA, Gray.

P. Zool. S. 1834, types *H. nemorensis*, Müll. [*Xesta*], *H. javanensis*, Fér. [*Xesta*], *H. exilis*, Müll. [*Hemiplecta*], *H. citrina*, Lin. [*Xesta*], *H. monozonalis*, Lin. [*Xesta*], *H. clairvillia*, Fér. [*Hemiplecta*], *H. vitrinoides*, Desh. [*Macrochlamys*], *H. juliana*, Gray [*Xesta*] and *N. striata*, Gray [*Hemiplecta*]; type restricted, Gray, P. Zool. S. 1847, p. 169, *Helix citrina*, Lin.; = *Xesta*, Albers, 1850, *type H. citrina*, Lin.; = "*Phereporae*," Desmoulins, Bull. Soc. Lin. Bord. III, 1829 [name inadmissible]; *pars?* = *Stenopus*, Guilding, Zool. Journ. III, 1828, type *S. lividus*, Guild. = *Guppya*, Mörch, J. de C. 1867, [as *Stenopus* had been previously used for a genus of Crustacea].

The type of Gray's *Nanina* is therefore *H. citrina* and not *H. vitrinoides* [*Macrochlamys indica*, Bs.], as supposed by some authors.

Benson himself distinctly admits the validity of Gray's *Nanina*, over his MS. name of *Tanychlamys* or *Macrochlamys* (*see* Proc. Zool. Soc. 1834, p. 89, J. A. S. B., 1836, and later on in the Annals and Mag.); had my Indian conchological friends referred to these papers, or to the J. A. S. B., 1832, p. 13, for the original and casual mention, in a footnote, of Benson's MS. name *Macrochlamys*, I am sure they would never have attempted to introduce so retrogade and useless a change, utterly unwarrantable in every way. Here is Benson's mention of the name in full,—" Those *(Pterocyclus* sp.) which I found, were, with several specimens of a *Cyclostoma*, a reversed *Carocolla* and *Macrochlamys*;"—then follows a foot-note,—" A new genus of the *Helicidae* separated by me from *Helix*, in consequence of the wide departure of the animal from the type of that genus." With this and a mere repetition of the name on page 76, ends the so-called description of *Macrochlamys* in 1832, although never claimed as such by Benson himself.

Many authors (Benson included) speak of his genus *Tanychlamys* as having been described in the Proc. Zool. Soc. 1834, but as far as I can trace this is not strictly the case. Benson appears to have sent a paper to the society containing an excellent description of the section, with the name *Tanychlamys* attached; the editor, however, changed it to *Nanina*, stating that it had been found to be the same as Gray's genus described a few pages previously; in the description the editor casually mentions that the form described was the *Tanychlamys* of Benson, MS. It is very doubtful if *Stenopus* is a section of *Nanina* at all; in any case the former can have no claim, as the name had previously been used for a genus of *Crustacea*, as has been pointed out by Mörch.

The fact of the name *Nanina* having been employed by Risso in 1826 is I consider of no importance, as it has long ago been pointed out that he used the name for the immature state of his own genus *Cyclops;* his name *Nanina* was therefore null and void and should not bar Gray's genus.

As Colonel Godwin-Austen has lucidly explained, though he draws a wrong conclusion, *Nanina*, Gray, is not the same as *Ariophanta*, Desmoulins, but equals the latter's group "*Phereporae*"; it would never do to adopt the specially separated section or subgenus of *Ariophanta* for the whole group, any more than to replace Draparnaud's *Pupa* (1801) by the sectional name *Vertigo* of Müller (1788), which was specially introduced for the forms with two tentacles only. By the method now universally adopted by all the leading conchologists, all parties seem to me fairly treated. Gray has his genus *Nanina* employed in a wide and comprehensive sense, as he intended. Desmoulins and Benson have their names employed for their respective strictly limited sections as they both originally intended. Benson did not include *Ariophanta* in his *Macrochlamys*, as he calls it *Carocolla*, nor did Desmoulins do so in the reversed case.

NANINA [MACROCHLAMYS] PSEUDOVITRINOIDES, n. sp.

J. A. S. B., 1832, pp. 13 and 76, as *Macrochlamys indica*, sine descr. (not *H. indica*, Pfr.); *H. vitrinoides*, Gray, P. Zool. S. 1849, pl. 2, f. 1-3, *cum anim.* [not *H. vitrinoides*, Desh.]; = *H. petrosa*, Bs., *pars*, [not of Hutton].

This is the common "snail" throughout the plains of the Gangetic Delta, quite distinct, both as regards shell and animal, from its close ally *N. petrosa*, Hutton, the type of which was from Mirzapore and which takes the place of the former in the higher regions of Lower Bengal; the two species were confused together by Mr. Benson under the name of *N. indica*, which he afterwards united to Hutton's *N. petrosa;* he could have seen but few specimens of our Calcutta form and those probably not living ones; Mr. Hanley does not represent our species in his invaluable Con. Indica, but gives a very fair figure of *N. petrosa*. The two varieties of *N. petrosa* recorded in my Handlist must be altogether eliminated; I am indebted to my friends Colonel Mainwaring and Mr. J. Caldwell for other specimens from Lucknow and Monghyr of *N. petrosa*, and to Mr. J. Wood-Mason for a fine series of *N. pseudovitrinoides* from Silhet.

I think Pfeiffer's Pl. 110, figs. 10-12 of the Conch. Cab. II, [not figs. 13-15] represents *N. pseudovitrinoides.*

NANINA [MACROCHLAMYS?] SIKRIGALIENSIS, G. Nevill.

I described this species, from Sikrigali in Behar, in my Handlist page 28; unfortunately the name was misprinted *N. sikrigallensis!* I may also take this opportunity of recording that species No. 73, page 28, *l. c.*, should be *N. cordemoyi*, not '*condemoyi*' as printed. The species being called after Mons. Jacob de Cordemoy, a distinguished Mascarene botanist.

Subgenus ACUSTA, Albers.

In my Hand-list, p. 45, I have erroneously classed this group as a subgenus of *Nanina*. It is, however, a subgenus of *Helix*, not of *Nanina*; I overlooked a note to that effect by Prof. von Martens, Moll. Ost-Asien, describing the jaw, &c.

TROCHOMORPHA PERCOMPRESSA, Blanford, Pl. V, Fig. 22.

Proc. Zool. Soc. 1869, p. 448, Bhamó, "coll. J. Anderson."

I know of no other specimen but the type, of which I now give a figure.

HELIX (AEGISTA) PERPLANATA, G. Nevill, Pl. V, Fig. 21.

J. A. S. B., 1877, p. 19, Mimboo, Upper Burma, diam. 17½, axis 4½ mil.

I now give a figure of the type of this species, which is closely allied to the Indian *H. tapeina* on the one hand and to the Chinese *H. trichotropis* on the other. It was discovered by Dr. Anderson at Mimboo, near the Yunnan frontier. In my Handlist, I have classed this group under the subgenus *Plectotropis*, Martens (1860, type *H. elegantissima*, Pfr.), but I now consider that it is not separable from the previously described *Aegista*, Albers (1850, type *H. oculus*, Pfr.); Prof. Martens has lately given an important tabular arrangement of *Aegista* (restr.) in his 'Conch. Mittheilungen', Bd. I, Heft. 5-6, with figures and descriptions; I fancy, however, the professor has overlooked an important locality I have recorded for *H. trichotropis*, *viz.*, Upper Burma; perhaps, too, the localities recorded for *H. setocincta* "Sando and Ava" are printer's errors for those given by A. Adams as "Sado and Awa-Sima"; at any rate, I do not suppose Ava in Upper Burma or Sanda in Yunnan are intended.

Subgenus ACAVUS, Montfort.

The specimens of some of this group in the Indian Museum are incorrectly registered in my Hand-list, page 8; the entries should be corrected as follows:—

HELIX (ACAVUS) HÆMASTOMA, Linnæus.

Syst. Nat. X, 1758; Reeve, Con. Ic. fig. 366 and Conch. Indica, pl. 127, fig. 2.

30 Ceylon; coll. H. F. Blanford and G. Nevill, Esqrs.

var. MELANOTRAGUS, Born.

Index and Test. Mus. Vindob. 1780, as *H. melanotragus*; Reeve, *l. c.*, fig. 366 C. and Conch. Indica, pl. 127, fig. 3.

10 Ceylon; coll. H. F. Blanford and G. Nevill, Esqrs.

Helix (Acavus) superba, Pfeiffer.

Zeits. Mal. 1850, Ceylon ; Reeve, *l. c.*, fig. 368.

2 Ceylon ; coll. H. Nevill, Esq.

var. roseolabiata, nov.

Hanley and Theob., Con. Indica, pl. 127, fig. 4, as H. superba.

6 Ceylon ; coll. H. Nevill, Esq.

A variety very different from Pfeiffer's type, a fact apparently not noticed by Mr. Hanley.

Helix (Acavus) phœnix, Pfeiffer.

Malak. Blät. 1854, for Conchyl. Cab., fig. 1134 and Ed. nov. t. 3, fig. 9-10 ; also Reeve, fig. 376, (as *H. melanotragus*, var.) and Conch. Indica, pl. 127, fig. 6.

10 Ceylon ; ex c. H. F. Blanford and G. Nevill, Esqrs.

Helix (Acavus) grevillei, Pfeiffer.

Proc. Zool. Soc. Lond. 1856, Ceylon and Novit. Conch., t. 30, fig. 6-7.

3 Ceylon ; coll. H. Nevill, Esq.

Subgenus Corasia, Albers.

According to Prof. C. Semper (Reise Philippinen, 1874), should be a section of *Cochlostyla*, not of *Helix*, as given in my Hand-list, p. 114. The same is recorded, *l. c.*, of the subgenera *Axina*, Albers, and *Callicochlias*, Hartm. (emend.).

The type species of *Axina* was not, however, examined ; so I still consider this last as doubtful.

Amphidromus masoni, Godwin-Austen.

Journ. As. Soc. Beng., 1876, Dihiri Parbat at 2000 ft.

This is my species No. 19, p. 127, of Hand-list, where I have erroneously recorded the species as *A. daflaensis*.

Subgenus Beddomea, G. Nevill.

Hand-list, 1878, p. 127, type *Bul. ceylanicus*, Pfr.

The animal of the type species of this very distinct and well-marked group was described by E. L. Layard (Ann. Mag. 1853), as "of a brilliant green colour, visible through the shell ; it feeds on the Coffee Plant." The group is recorded in Pfeiffer's Nomenclator (ed. Clessin), 1879, as part of the section *Phengus* of the genus *Cochlostyla !*

BULIMINUS (CERASTUS) JICKELIANUS, G. Nevill, Pl. VI, Fig. 2.

Hand-list, 1878, p. 133, Wadela Plateau, Abyssinia.

Shell imperforate, or scarcely superficially rimate, elongately oblong, moderately solid, longitudinally subobsoletely and obliquely striate, the striæ distinct near the suture and also near the peristome; spire conically elongate, rather acutely pointed; whorls 6½ or 7, the first 4½ scarcely convex, increasing regularly and slowly, the last two distinctly convex, increasing rapidly, the last one unusually attenuately produced; aperture somewhat everted, compressed, considerably higher than broad, columella broadly reflected, somewhat oblique.

Long. 34, diam. 15; apert. alt. 15, lat. 10 mil.

HAB. Wadela Plateau, Abyssinia; coll. W. T. Blanford, Esq.

Type, Indian Museum, Calcutta.

The dimensions of *B. olivieri*, Pfr., as originally described are—

Long. 27, diam. 14; apert. alt. 14½, lat. 8 mil.

From this latter species, *B. jickelianus* can be distinguished by the more pointed spire, less convex whorls, the last one especially being much less globose; by the more or less obsolete sculpture, more oblique columella, more everted aperture, closed umbilicus, &c.

Genus STENOGYRA, Shuttleworth.

Bern. Mitth. 1854; type, restr. H. and A. Adams, 1855, *Helix calcarea*, Born.

Subgenus GLESSULA, Martens.

Albers Heliceen, II, 1860, type *Achatina gemma*, Benson.

A genus of the family *Cionellida* in Pfeiffer's Nomenclator (ed. Clessin), a classification which I consider altogether unjustifiable. I am afraid the group will prove not separable from *Subulina*, Beck, the type of which is the West Indian *Helix octona*, Chemnitz, in which case the latter name must have priority. Be this as it may be, *Ach. paritura*, and *involuta*, Gould, *darnaudi* and *sennaarensis*, Pfr., as well as several other species, all from Africa—both East and West coasts—certainly belong to *Glessula*.

STENOGYRA (GLESSULA) OREAS, Benson, MS. Pl. V, Fig. 11 (Copy).

Reeve, Conch. Icon. 1850, fig. 113, as *Achatina oreas*, Nilgiris, long. 15½, diam. 7½ mil., anfr. 7 (ex icone); not *Ach. oreas*, Pfeiffer (as of "Benson"), or of Nevill, Hand-list I, p. 168.

I am indebted to Colonel Beddome for a single specimen of the true *St. oreas*, from Travancore. Anfr. 7; long. 14½, diam. 7¼ mil.

Mr. Hanley in his valuable and careful notes in the Con. Indica, p. 34, has already noticed the confusion of two distinct species under this name.

Stenogyra (Glessula) pseudoreas, n. sp.

Pfeiffer, *Mon. Helic.* III, 1853, as *Achatina oreas*, Benson, MS. Nilgiris—anfr. 7 (?), long. 12½, diam. 5 mil., not *Ach. oreas*, Reeve (as of Benson) 1850; Nevill, Handlist, I, p. 168, as *St. oreas.*

Nilgiri specimens collected by Mr. Blanford (which I take for my type) measure—long. 11, diam. 5 [vix] mil. and are of six whorls only.

var. subdeshayesiana, nov.

Anfr. 6; long. 11, diam. 4½ mil. Type var. from the Anamullays, coll. Colonel Beddome; also from the Pulney Hills, coll. Rev. Fairbank.

Stenogyra (Glessula) jerdoni, Benson, MS. Pl. V, Fig. 14 (Copy).

Reeve, Conch. Icon. 1850, as *Achatina jerdoni*, Nilgiris—anfr. 7 to 8, long. 16, diam. 6 mil. (*ex icone*).

Pl. 78, fig. 10 of the Con. Indica represents a smaller form, of only 14 mil. and with the spire more produced and the last whorl a little less convex.

Stenogyra (Glessula) nilagirica, Benson, MS. Pl. V, Fig. 15 (Copy).

Reeve, Conch. Icon. 1850, fig. 87, as *Achatina nilagirica*, anfr. 10, long. 28, diam. 9 mil. *(ex icone)*; Con. Indica, Pl. 35, fig. 6, as *Ach. perotteti* (not *Ach. perotteti*, Pfr.).

I have no doubt of the distinctness of Reeve's *A. nilagirica* and Pfeiffer's *A. perotteti*, despite the fact that the former has been classed as a variety of the latter by Dr. Pfeiffer; I have now given copies of the original type figures of both, which I think will convince most conchologists who have studied the genus. I have never seen a specimen of the true typical *St. nilagirica*, described by Reeve as "finely crenulate at the suture, then striated" &c. Colonel Beddome has, however, sent me specimens of what I consider a variety, though a very distinct one.

var. kurnoolensis, nov.

Anfr. 11; long. 30, diam 9½ mil.

Distinguished from both *St. nilagirica* and *St. perotteti*, not only by its greater size and more numerous whorls, but especially by the (throughout) regular and prominent striation, not crenulate at the suture; from *St. vadalica*, Blanford, which it perhaps even more closely resembles, in general aspect at any rate, by the more abruptly tapering apical whorls, more arched columella, &c.

Nullaymullay mountains, Kurnool District, at 2500 ft.

STENOGYRA (GLESSULA) PEROTTETI, Pfeiffer, Pl. V, Figs. 17 and 17 *a* (Copies).

Rev. Zool. 1842, Nilgiris—anfr. 8, long. 22, diam. 9. mil. (not of Reeve, the Con. Indica, or Conch.—Cab. II, Pl. 26, figs. 16-17, as *Achatina perotteti*).

I have already remarked, under the preceding species, regarding the confusion of this species with Reeve's *St. nilagirica;* I have given copies of Dr. Pfeiffer's two original figures; he describes the sculpture as "ad suturam striati." The specimens from Neddoowutton in the Nilgiris, recorded in my Handlist, are the only ones I have seen of this species and they are unfortunately in bad condition.

STENOGYRA (GLESSULA) BENSONIANA, Pfeiffer.
Pl. V, Figs. 16 and 16 *a* (Copies).

Zeits. Malac. 1851, Nilgiris, anfr. 8½, long. 18, diam. 6½ mil.; Conch.-Cab. II, Pl. 26, figs. 12 and 13.

I have thought it desirable also to give copies of the original figures of this species, as the one given in the Con. Indica is quite unrecognizable. Besides, Dr. Pfeiffer's figures seem to me to show only 7½ whorls, whereas he describes it as having 8½, he also speaks of the suture as being "*confertim denticulata.*" The Museum specimens from Kotagherry have only 7 whorls—long. 17, diam. 6 mil.; I have lately also received from Colonel Beddome five specimens from the Sispara Ghat, three of these agree well with type figures, the other two are a slight variety with rather more convexly rounded whorls.

STENOGYRA (GLESSULA) FACULA, Benson, Pl. V, Fig. 18 and 18*a*. (Copies).

Ann. Mag. 1860, Nilgiris, anfr. 7½, long. 18, diam. 8 mil. for *Achatina perotteti* of Reeve, fig. 102 (not of Pfr.).

The only specimens in the Museum that I can consider as referable to this species are three from the Pulney Hills—anfr. 9; long. 18, diam. 7¾ mil. In sculpture they agree with Benson's description, "*irregulariter striatula*" &c.; anfr. ult. "*antice leviter remote plicato-striato.*" Mr. Hanley himself points out that his representation of this species in the Con. Indica is not an accurate one.

STENOGYRA (GLESSULA) OROPHILA, Benson, MS. Pl. V, Fig. 19 (Copy).

Reeve, Conch. Icon. 1850, fig. 105, anfr. 7, long. 14 mil., as *Achatina orophila*, Nilgiris and Colombo; fide Pfr. = his *A. ceylanica*.

I give a copy of Reeve's original magnified figure of his *A. orophila*, as I am by no means convinced Dr. Pfeiffer is right in uniting it to his *A. ceylanica;* to judge from the figures, I should say they were quite distinct species. It may be that Reeve confused two distinct forms, the one figured (probably from the Nilgiris) a good and distinct species, the other from Ceylon a mere variety of *St. ceylanica*, which may have been sent, or shown, to Dr. Pfeiffer as *A. orophila* and caused him to unite the two species. I have not myself seen any species of the group, *St. nitens*, *ceylanica*, *punctogallana* &c., from Continental India; the very distinct *St. oreas* and *pseudoreas* are the nearest I know of. *Ach. orophila* is not mentioned in the Con. Indica.

STENOGYRA (GLESSULA) AMENTUM, Benson, MS. Pl. V, Fig. 20 (Copy).

Reeve, Conch. Icon. 1850, fig. 82, Howrah, as *Achatina amentum*, anfr. 8½, long. 30, diam. 11 *(ex icone)*; Benson, Ann. Mag. 1860, Nerbudda Valley, long. 24 mil.; Pfeiffer, Mon. III, anfr. 9, long. 22, diam. 7 mil.; Con. Indica, pl. 85, fig. 3.

Dr. Pfeiffer in his *Monogr. Helic.* has apparently overlooked Benson's important notice of this species as above quoted. Mr. Hanley's excellent figure of *Ach. amentum* is doubtless from a Nerbudda Valley specimen, with which it agrees exactly in measurements; long. 24, diam. 9 mil.; it appears to be a smaller and slightly different variety from the type Howrah form. I have already recorded that this rare species has also been found at Ganjam by my friend Mr. Valentine Ball of the Geological Survey; it has not, however, been found again in the immediate vicinity of Calcutta.

STENOGYRA (GLESSULA) SUBFUSIFORMIS, Blanford, Pl. V, Fig. 13.

P. Zool. Soc. 1869, Ponsee in Yunnan at 3300′, anfr. 8, long. 17⅔, diam. 5⅔ mil.

I give a figure of the unique type of this very distinct species, for which the Museum is indebted to Dr. J. Anderson's very successful researches during the first Yunnan Expedition. It is the most northerly species of *Glessula* as yet known, no other species having been described from China or Japan; there are three or four species known from the Philippines, Borneo, and Sumatra; in the main, however, the group appears to be essentially an Indo-African one. No species is as yet known from the Andamans, Nicobars, Seychelles, or Mascarene Islands; evidently *Glessula* is a continental rather than an insular genus.

STENOGYRA (GLESSULA) BLANFORDIANA, G. Nevill, Pl. V, Fig. 12.

Journ. Asiat. Soc. Beng. 1877, p. 26, Ponsee in Yunnan.

Shell ovately turreted, solid, of a dark brown colour, two apical whorls smooth, the others sculptured with raised, coarse, longitudinal, nearly perpendicular striæ, much crowded together and slightly flexuous on the last whorl; spire turreted, with very obtuse apex and excavated suture; whorls six, scarcely convex, the last one rounded at base; aperture vertical, subquadrilateral, with a much thickened white peristome; columella broadly reflected, thickened, white, curved, forming an acute tooth, with a well developed incised notch at its base.

Long. 7, diam. 3 mil.

HAB.—Ponsee (type); also from near Bhamô. This species closely resembles *Glessula peguensis*, Blanford, but is less convex, that is, more slender, and of thicker texture; it can also be easily distinguished by the characteristic, crowded, well-developed, nearly perpendicular, longitudinal striation, varying slightly in direction on each whorl, much as in many species of *Pomatias*. The columella also is peculiar.

Type, Indian Museum, Calcutta.

STENOGYRA (GLESSULA) BOLLAMPATTIANA, Beddome.

Con. Indica, Pl. CLVI, fig. 1, as "*Achatina bottampotana*," Beddome, MS.

Long. $25\frac{1}{2}$, diam. 10 mil.; whorls 7, of unusually solid substance.

I am much indebted to Colonel Beddome for typical specimens of this very distinct and rare species, also for kindly informing me that it is found on the Bollampatty Hill, near Coimbatore at 7000′, and that the name should be spelt as I have now given it, Mr. Hanley having misread the original label.

BALEA DOHRNIANA, n. sp.

Shell of seven gradated, cylindrical whorls, increasing very gradually, the last one proportionately very short, apex obtuse; brown, irregularly and indistinctly mottled with blue; almost smooth, the somewhat irregular, rugose striæ being nearly obsolete, even under a lens, except immediately behind the peristome; aperture markedly everted, as broad as high, chestnut-brown within; peristome broadly reflected, white, thickened, regularly rounded below, columella broad, nearly straight, margins of aperture joined with a distint callosity, no parietal tooth. Long. $10\frac{1}{4}$, diam. $3\frac{1}{4}$ mil.

HAB.—Peru.

The only other species I know of from Peru, or indeed from South America, is the *B. peruviana* of Philippi, which, however, has 8 to 9 whorls and measures long. 13 to 14, diam. 3 mil.; I have named this interesting form, for which I am indebted to my friend Mons. P. Joly of Algiers, in honour of Dr. Henry Dohrn of Stettin. There are several very interesting new forms of *Clausilia* obtained by the same collector, in Mons. Joly's collection.

Type, Indian Museum, Calcutta; also in coll. Joly and Dohrn.

BALEA PYRENAICA, Bourguignat.

Rev. and Mag. Zool. 1857, Pyrenees, long. 12, diam. 3 mil.

var. LUCHONENSIS, nov.

Vix perforata, anguste fusiformi-turrita; anfr. 8—9 convexiusculis, ultimo vix majore, basi rotundato; apertura oblonga, superne haud coarctata, peristomate expanso, marginibus callo valido, haud tuberculato, junctis.

Long. 9, diam. 2¼ mil.

HAB.—Bagnères de Luchon, Pyrenees.

Type var., Indian Museum, Calcutta; coll. G. Nevill, Esq.

VERTIGO PRASLINENSIS, n. sp.

Nevill, Proc. Zool. Soc. 1869, p. 65, as "*Carychium*, n. sp.?"

Shell resembles *Pupa liénardiana*, Crosse, from Rodriguez, but the spire is less produced and there is no trace of the conspicuous parietal tooth; apex remarkably obtuse; 4½ whorls which increase very rapidly, the first three more or less cylindrical, the last one moderately convex; smooth, even under the lens no trace of sculpture is discernible; aperture triangular, regularly rounded at base, external margin somewhat obsoletely sinuate; a strongly developed, transverse columellar tooth, three other palatal teeth, equidistant, the middle one the largest, no parietal tooth.

Long. 2 mil.

HAB.—Island of Praslin, Seychelle Group.

Type, Indian Museum, Calcutta.

SUCCINEA LONGISCATA, Morelet.

Moll. Portugal, 1845, pl. V, fig. 1; Baudon, Journ. Conch. 1877, pl. XI, fig. 2, as *S. elegans*, var. *longiscata* and subvar., *l. c.* 1879, pl. XI, fig. 6, as *S. elegans*, var. *longiscata*, subvar. *Folini*; Bourguignat, Esp. Franc. *Succinea*, p. 20, from Troyes, (as possibly introduced).

The Museum is indebted to Dr. J. Anderson for numerous specimens, preserved in spirit, from Mount Hermon in Palestine of this well characterized and very distinct species. How so many conchologists can have confused it with *S. elegans*, Risso or *S. pfeifferi*, Rossm. seems to me almost incomprehensible. Probably in most instances they had not seen the real species at all, or only examined some wretched isolated specimen. The species has only been hitherto recorded from Portugal, Algiers, Biarritz, and Troyes (?); this indubitable Palestine habitat is therefore very important, more especially as no well authenticated species has been as yet identified from Asia Minor, though the genus has been long known to occur there.

These Mount Hermon specimens are perfectly undistinguishable from numerous specimens I possess from Maison Carrée in the Province of Algiers; the latter again I carefully compared with typical Portuguese specimens in the collections of MM. Morelet and Crosse and found to be unmistakeably of one and the same species. The variety, so well described and figured by Baudon in the Journ. de Conch. 1879 as var. *Folini*, differs but very slightly, scarcely sufficiently to justify its separation, even as a variety, this was evidently also the opinion of M. Baudon when he wrote, *l. c* 1877 p. 173, "J'ai recu de MM. Bérillon and de Folin de nombreux specimens de *S. longiscata* des Basses Pyrénées parfaitement semblables au type de Morelet." I found the variety *Folini* tolerably abundant both at Biarritz and Bayonne. The differences between *S. elegans* and *S. longiscata* are well shown by M. Baudon's excellent figures, *l. c.* 1879, Pl. XI, fig. 6 and fig. 5; the former being *S. longiscata* and the latter *S. elegans.*

SUCCINEA YARKANDENSIS, n. sp. Pl. V, Fig. 10.

Moll. Yarkand Mission, 1878, as S. *pfeifferi*, Rsm., var.

Shell oval, comparatively somewhat thick, of a bright amber colour, last whorl throughout closely, regularly, and undulately striated, striæ though distinct somewhat superficial, or not deeply incised; spire shortly produced, strongly twisted, abruptly and strikingly bent back, apex somewhat obtuse; whorls 2½, the last very large in proportion, narrowly produced, that is not tumid or ventricose; aperture considerably everted, very long in proportion to its breadth, margins joined by a small amber coloured callosity, columellar margin not thickened, nearly straight, beautifully gradually rounded at base.

Long. 11, diam. 6; apert. alt. 7½, lat. 4 mil.

HAB.—Yarkand and Sasak Taka (Kashgar); coll. Dr. Stoliczka. Since I wrote my account of the Mollusca of the Yarkand Expedition, I have been able to collect and carefully examine numerous forms of the European *Succineæ*, and have also had the advantage of studying the excellent and elaborate monographs of the French species by MM. Bourguignat and Baudon (J. de C. 1877 and 1879); I now consider this Yarkand form as a distinct and well characterized species, nearest allied to *S. contortula*, Baudon; the few whorls, the remarkable way in which the spire is abruptly bent back, the distinct and regular, though superficial, striation, especially noticeable near the columellar margin, the everted aperture, &c. all enable the species to be distinguished at a glance from others of the group of *Suc. pfeifferi.*

Type, Indian Museum, Calcutta; also in coll. von Martens and Bouvier.

Genus HYALIMAX, H. and A. Adams.

Gen. Moll. II, 1855, as subgenus of *Limax*, type *Limax perlucidus*, Quoy (insufficiently described); ampl. Fischer, J. de C. 1867, as genus allied to *Succinea*.

In my Hand-list I attributed this genus to Prof. Fischer, which was scarcely strictly accurate. I am indebted to Mr. Wood-Mason for the generic identification of a new slug, lately found at the Andamans by Mr. de Roepstorff, undoubtedly belonging to *Hyalimax*. This, I consider, a very important discovery, especially as bearing upon my statement, in the introduction to this paper, of the remarkable affinities between the land Mollusca of the Mascarene Islands &c. and those of the Andaman and Nicobar groups &c.

Hyalimax is not known from Continental India or Ceylon; whereas three species are known from Mauritius and Bourbon, one from the Nicobars, described by Mörch in 1872 as *Hyalimax reinhardti*, and finally the new Andamanese form, now for the first time recorded. I trust Mr. Wood-Mason will shortly carry out his present intention of giving us a detailed description of this curious "slug." I should not be surprised if *Parmella* of Mr. H. Adams, described from the Fiji Islands in the P. Z. S. for 1867, prove to be an allied form to *Hyalimax?*

LIMNAEA PHILIPPINENSIS, n. sp.

Shell scarcely rimate, small, horn coloured, conically globose, longitudinally striate under the lens; spire short, apex rather pointed; whorls four, the upper ones very small, scarcely convex, the last one very large in proportion, tumidly ventricose; aperture ovate, large, proportionately unusually broad, margins joined by a thin callosity, outer margin boldly, convexly rounded; columella straight, very slightly twisted, broadly reflected, rounded at base.

Long. 8½, diam. 5½; apert. alt. 5¾, lat. 4 mil.

HAB.—Lucban, Luzon (Philippines), coll. R. Hungerford Esq.

This is a small species of the group of *Limnaea peregra*, closely allied to the next species, of which indeed some conchologists may prefer to rank it as a geographical variety. Both perhaps are geographical races, or subspecies, of *L. ollula*, Gould, P. B. S. 1869 from Hongkong, sent me from that place and also from Swatow by Surgeon-Major Hungerford, which again = *L. pervia*, Martens.

LIMNAEA ANDERSONIANA, Nevill, Pl. V, Fig. 9.

J. Asiat. Soc. Bengal, 1877, p. 26, Yunnan at 4000 ft.; var., Nevill, Moll. Yarkand Exp. 1878, p. 9, Yarkand, not the var., *l. c.* from North Tangitan and Kashgar, which is *L. pervia*, Mart. (= *L. ollula*, Gld.).

LIMNAEA YUNNANENSIS, NEVILL, Pl. V, Fig. 8.

J. Asiat. Soc. Bengal, 1877, p. 27, Sanda in Yunnan.

PHYSA HUNGERFORDIANA, n. sp.

Shell convexly ovate, imperforate, moderately thick, scarcely transparent, somewhat obsoletely striate, striæ close, regular, slightly flexuous; yellowish brown, generally covered with a dark coloured deposit; spire turretly produced, suture excavated, apex somewhat obtuse; whorls 3½, increasing rapidly, convexly swollen; aperture narrowly produced, as broad above as below, outer margin gradually rounded; columella somewhat reflected or thickened, twisted, bent a little backwards at base.

Long. 13½ to 14½, diam. 7½; apert. alt. 8, lat. 4 mil.

HAB.—Lucban, Luzon; coll. R. Hungerford Esq.

The only other Philippine, or indeed Malayan, species except *Ph. moluccensis*, Lesson, is *Ph. philippiana*, Martens, Malak. Blät. 1867; long. 19, diam. 12 mil.

Küster's Pl. I, figs. 18—20 will give a rough idea of the general shape of *Ph. hungerfordiana.*

ACMELLA HUNGERFORDIANA, n. sp. Pl. VII, Fig. 11.

Shell, in shape like *Acm. moreletiana*, Nev., but a little less turreted, deeply but narrowly umbilicate, smooth, polished, hyaline, so transparent that often the axis can be traced nearly up the apex. Spire regularly conically pointed, suture excavated, narrowly marginate, or rather shelved, below, apex somewhat acute; whorls 6, increasing very gradually and regularly, the last one convexly globose, faintly depressed near the very characteristic, profoundly excavate, though narrow, umbilicus; aperture ovately rounded, outer margin regularly convexly rounded; columella acutely angled about the middle (at the umbilicus), then straight and gradually rounded at base.

Long. 3½, diam, 2¾ mil.

HAB.—Guimaras (Philippines), living on the ground, amongst dead leaves, &c., in company with *Cyclotus pusillus*, Sow., var. nov., *Nanina caducior*, Rv., species of *Cyclophorus* and *Pupina*, &c.; coll. Surgeon-Major R. Hungerford.

This very interesting shell is the finest and largest species of the genus, as yet described; it presents many interesting points of resemblance to my *Acm. moreletiana*, Proc. Zool. Soc. London, 1879, Pl. 59, fig. 4, from Batti Malve (Nicobars).

Type, Indian Museum, Calcutta; also in coll. Dohrn and Hungerford.

CYCLOTUS PUSILLUS, Sowerby.

P. Z. S. 1843, Luzon and Negros.

var. NANA, nov.

Differing from the type by its considerably smaller size, non-reflected peristome and comparatively slightly more developed spiral sculpture; the living animal covers its shell with a thick coating of mud, arranged in a quasi-symmetrical manner, as I have also seen in species of *Succinea* *Pterocyclus*, &c.; the operculum externally is distinctly concave.

Diam. 6¼, alt. 4¼ mil.—Cebu.

Diam. 5¾, alt. 3 mil.—Guimaras.

Pfeiffer records typical *C. pusillus*, ex coll. Cuming, as diam. 11, alt. 6 mil.

HAB.—Cebu (type var.) and Guimaras. This small *Cyclotus* was found tolerably abundantly by Surgeon-Major Hungerford, living on the ground, in company with species of *Pupina* and *Acmella*, &c.

Genus CYATHOPOMA, Blanford.

Colonel Beddome has already pointed out, and I believe it is now generally accepted as correct, that *Jerdonia* and *Mychopoma*, Blanford, can only be retained as sections or subgenera of *Cyathopoma*. Hitherto the genus has been supposed to have a very limited range, but this is not so in fact, as it extends as far as the Pacific Archipelago where the species are known under the name of *Diadema*, Pease (= *Garettia*, in Catal. Paetel and Mus. Godef.); the type species of Pease's *Diadema (Pterocyclos?) parvus*, Pease, 1865, from the Hervey Islands, is, as regards its shell, a true *Cyathopoma*, being wonderfully close to *Cya. filocinctum*, only rather smaller: its operculum is correctly described by Pease as follows:—"*O. subcartilageum, elevatim spiraliter lamellatum, intus concavum, basi late reflexum;*" the very concave shape gives it a striking resemblance to that of many species of *Pterocyclus*. Reference to the original description of the operculum of *Cyathopoma* will at once show that no separation can be effected on this character only: "*O. truncate conoideum, concentricum, multispirum, e duabus laminis compositum; interna membranacea, externa testacea perconcava; anfractuum marginibus externis in lamellam testaceam, versus medium incurvatam, interdum pulchre sculptam, elevatis.*"

I consider therefore that *Diadema* must rank as a subgenus of *Cyathopoma*, distinguished by its *Pterocyclus*—like operculum, and that it is of approximately equal value with *Jerdonia*. The following is Blanford's original description of the operculum of *Jerdonia*:—"*O. concentricum, arctispirum, sulco marginali circumdatum, duplex; interne membranaceum, externe testaceum et ex anfr. vittaeformibus compositum, quoque proximi interioris marginem externum tegente.*"

It is very remarkable that at the Hervey Islands another small shell occurs with all the characters of the shell of *Jerdonia* and closely resembling, indeed, the type species *J. trochlea*; this is the *Cyclostoma biangulatum* of Pease, P. Z. S. 1864, referred to *Cyclophorus* (*Ostodes*) in the *Donum Bismarckianum* and still more correctly, I consider, to *Cyclomorpha* of

Pease, by von Martens in the Zool. Record for 1871, p. 162; I have extracted the operculum and find it to be something like that of *Omphalotropis*, of thin, horny texture, with 4 to 5 well defined whorls.

The operculum of *? Diadema rotella*, Pease, a small smooth form, something like a miniature *Leptopoma luteum*, is not as yet known, and it is not present in our single Museum specimen from Rarotonga.

CYATHOPOMA (JERDONIA) IMPERFORATUM, n. sp.

Beddome, P. Zool. S. 1875, p. 449, as "probably a new species" from the Anamallays at 6600 ft. (under *Cya. elatum*, Bedd.).

There is a single specimen in the Museum, for which we are indebted to Colonel Beddome; the species is at once distinguished by its being the only described species of the genus with an imperforate base; I hope to give a figure and more detailed description later on.

Alt. 2½, diam. 2 mil.

CYATHOPOMA SHEVAROYANUM, Beddome, Pl. VI, Fig. 7.

Proc. Zool. Soc. 1875, Shevaroy and Yellagherry Hills (Salem District).

I have thought it well to publish the three figures of this interesting form which had been prepared under the directions of the late Dr. Stoliczka; the specimens are from the Shevroys. The operculum externally presents a curious analogy to that of some species of Turbo; it is convex, testaceous, smooth, with only a very small and inconspicuous "umbo," or opening, which is situated considerably above the centre, consequently near the top of the aperture.

CYATHOPOMA (JERDONIA) BEDDOMEANUM, Nevill.

Beddome, Proc. Zool. Soc. 1875, as *Cyathopoma (Jerdonia) blanfordi*, Tinnevelly Mns. at 4000 ft., not *Cya. blanfordi*, H. Adams, P. Zool. S. 1868, Seychelles.

PTEROCYCLUS CYCLOPHOROIDEUS, n. sp.

This is a form that has hitherto been confused with *Pt. nanus*, Benson, the shell is more depressed and of thicker substance, resembling more closely *Cyclophorus stenostoma*, Sowerby, both in form and colouration; it can be distinguished at a glance by the apparently constant absence of the conspicuous band at the periphery; I intended, despite all the above, to have merely separated it as a subspecies, when I noticed that all my Anamullay specimens have a much raised, concave operculum, whilst on the other hand in my single operculated specimen of *Pt. nanus* it is only slightly raised, scarcely concave, &c. The Museum is indebted to Colonel Beddome for three operculated specimens from the Anamullays, one of which I take as my type form.

Alt. 8¾, diam. 16 mil.

The same valued correspondent has also sent me from the Anamullays two specimens of a light yellow (instead of darkish brown) colour, scarcely if at all streaked or mottled, whereas my type has a more or less reticulate style of painting, for this form I propose the name var. *subluteola*.

Colonel Beddome has further sent two specimens, from the Anamullays at 2000 feet, of a smaller, rather solid form, in colouration &c. presenting a remarkable analogy to *Cyclophorus stenostoma*; this may be known as var. *substenostoma*.

I may mention here that the Colonel has also found in the Anamullays an allied, rather larger species, very strikingly streaked with "tiger-like" markings, with a somewhat similar operculum, but well characterized by the much more highly developed "wing" to the peristome, for which he proposes the name *Pt. comatus*, Beddome, n. sp.

PTEROCYCLUS NANUS, Benson.

Ann. Mag. 1851, Nilgiris, "taken with *Pt. bilabiatus*," diam. 29 mil.

The Museum possesses three specimens from the collection of the late Dr. Stoliczka, unfortunately only labelled "South India." These agree exactly with the original description and with Pfeiffer's figures of a typical specimen, Conchylien Cabinet II, Pl. 49, figs. 31-3, at once characterized by the conspicuous band at the periphery, rather raised spire, and rather simple lip. Looking to the original description of *Pt. bilabiatus*, as a guide to the exact habitat of the type, apparently the neighbourhood of Salem will prove also to be the home of this form.

Mixed with the above was a single specimen of an interesting, rather more richly painted, very flat-spired form, with the whorls increasing a a little more slowly, the umbilicus a trifle more open, &c., this I propose to distinguish as var. *applanata*.

Alt. 7, diam. 13¾ mil.

var. REFLEXILABRIS, nov. (? distinct species).

A white apparently colourless form, with black apex and easily distinguished from the preceding, as well as *Pter. cyclophoroideus*, by the fragile, broadly reflected and duplex peristome, rather differently shaped too above; the operculum, in my single specimen, agrees with what I take to be the typical form; it is very little raised, or concave. This specimen I purchased from the collection of the late Mr. Lombe Taylor, labelled "Khoondah Mountains, coll. Pirie". Mr. H. F. Blanford also possesses two specimens, labelled "Nilgiris;" they are doubtless from the same habitat.

CYCLOPHORUS PEALIANUS, n. sp. Pl. VI, Fig. 3 (vel C. SUBLAEVIGATUS, Blf., var. PEALIANA).

J. A. S. B. 1877, page 28, Naga Hills, axis 30, diam. 56 mil., as *C. sublaevigatus*, Blf. var. *pealiana*.

Openly and deeply umbilicate, conically somewhat depressedly turbinate, solid; under the lens, the lower whorls are most minutely decussately sculptured, the apical 2½ whorls on the other hand possessing characteristic, well marked, distant, longitudinal striation only, these striæ being incised and very obliquely flexuous; above the periphery a broad, white zone, above and below which there are crowded chestnut-brown bands, almost or altogether confluent, umbilical area white; spire moderately raised, with the apex exserted in a "mammillate" manner, suture distinct; whorls 4½, convex, the last one with a raised and somewhat rounded keel at the periphery, which becomes obsolete near the peristome; aperture almost round, oblique, of a bluish-white colour, peristome callously expanded, boldly and evenly rounded, columellar margin also evenly rounded, margins of a very characteristic, brilliant orange-red colour, joined by a well developed callosity of the same shade.

Alt. 40½, diam. 58 mil.

Type, Indian Museum; also in coll. Morelet, von Martens and Dohrn.

Hab.—Naga Hills; coll. S. E. Peal.

This fine form which I have previously described and named in the Journal, I still consider may be better classed as a variety, though a very distinct one, of the smaller, more depressed and white lipped *C. sublaevigatus* of Blanford. Nevertheless I have thought it well to give it here a regular specific name, with a detailed description, as a matter of convenience for such conchologists as may deem it worthy of specific rank.

CYCLOPHORUS (THEOBALDIUS) ORITES, n. sp. Pl. VI, Fig. 4.

Broadly and openly umbilicate, solid, depressed, subdiscoidal, covered with a rather thick, smooth, bright yellow, or horn-coloured, epidermis, throughout under the lens very minutely, closely, obliquely striated; spire perfectly flat, suture excavate; whorls 4, the last one perfectly round, increasing unusually rapidly in size; aperture circular, peristome double, the outer margin above near the body whorl, being slightly subangulately produced, showing a distinct transition to the "wing-like" process of *Pterocyclus*, columellar margin oblique, the duplication of the peristome becoming obsolete.

Operculum thin, horny, slightly immersed, flat, composed of five or six acutely defined volutions.

Alt. 5½, diam. 14$\frac{1}{15}$ mil.

Type, Indian Museum; from Sikkim, Chola Range, at 11,000 ft.

This interesting species, No. 73, page 276, of my Hand-list, is very distinct from its allies of South India and Ceylon.

CYCLOPHORUS SPECIOSUS, Philippi.

Zeits. Mal. 1847, Hab. ?, alt. 35, diam. 61 mil.

var. AUREOLABRIS, Nevill.

Handlist I, 1878, p. 267, Burma (erron.).

I am much indebted to Mr. Wood-Mason for the information necessary to establish the exact home of this well characterized and very beautiful form, almost deserving of specific rank.

A second specimen, in more perfect condition, having been obtained by E. W. Dun, Esq., of H. M.'s 34th Regiment, N. I. (whilst accompanying Major M. O. Boyd on his recent mission to the Lushai Chiefs) on a ridge within 10 miles of Lushai Haut.

Alt. 41½, diam. 59, perist. crass 8 mil.

CYCLOPHORUS FORMOSAENSIS, n. sp.

Pfeiffer, Nov. Conch. II, 1864, Pl. 68, figs. 14—15, Formosa, as *C. exaltatus*, var. ?

Surgeon-Major Hungerford who has lately found numerous living specimens, both of the Formosan form and of the Hongkong *C. exaltatus*, Pfr. considers them undoubtedly specifically separable. With this view, I entirely agree; Pfeiffer himself indeed appears to have been in considerable doubt on the subject.

Type, Indian Museum, Calcutta; also in coll. Beddome, Hungerford, Dohrn, &c.

PUPINA GUIMARASENSIS, n. sp.

Very closely allied to the Cebu *P. bicanaliculata*, Sow.; smaller, more compressed, apex slightly more obtuse, of a light reddish-brown colour, smooth, of a thicker and less transparent substance; the upper whorls a little more convex, the last two (especially the last) markedly less tumidly swollen; aperture smaller, rounder, with the slight deflection of the outer margin above less developed, the parietal plication stronger, less obliquely twisted, columellar characters much the same.

Long. 6, diam. 3⅓ mil.

Cebu specimens of *P. bicanaliculata* measure, long. 7, diam. 4⅓ mil.

HAB.—Guimaras; coll. Surgeon-Major R. Hungerford.

By some this Guimaras form may be considered as a geographical variety of *P. bicanaliculata*; its characters seem to me, however, to compel specific separation.

PUPINA HUNGERFORDIANA, Nevill, Pl. VI, Fig. 6.

Handlist I, 1878, "Asadden Rv.," long. 8¼, diam. 5 mil.

I have nothing to add to my above given description of this very distinct species, but it is necessary for me to correct my altogether mistaken reading of the original label of the locality sent me by its discoverer—Surgeon-Major R. Hungerford—it should read "Hsaddan Koo, Salween Valley."

CATAULUS TORTUOSUS, Chemnitz.

Conch.-Cab. I, Vol. XI, 1795, figs. 1882-3, "Nicobar Islands," as *Turbo tortuosus.*

Mr. Benson long ago expressed his belief that this most remarkable form would prove to be a native of South India and not of the Nicobars. If this were the case, it could scarcely have escaped the researches of so indefatigable a naturalist as Colonel Beddome; nor has it—the Colonel having lately found a single specimen on the Hills N. E. of Trevandrum at 2500 feet, which he has most generously presented to the Indian Museum; the apical portion is unfortunately broken away, but the remainder agrees well with the somewhat crude original figure and the much better ones of Sowerby in the Thesaurus and Con. Indica.

ALYCAEUS MONTANUS, n. sp. Pl. VI, Fig. 5.

Openly and widely umbilicate, much depressed, solid, bright corneous brown, closely, evenly and regularly ribbed, ribs somewhat superficial, scarcely flexuous, close-set, for a short distance at the sutural tube more crowded and more strongly developed; spire scarcely elevate, apex obtuse; whorls 4, regularly evenly rounded, constriction scarcely defined, sutural tube short (about 1 mil.); aperture circular, peristome slightly thickened, but not double; operculum thick, black, and concave.

Hab.—Sikkim, at 11,000 ft.

Diam. $5\frac{1}{4}$, alt. $3\frac{1}{10}$ mil.

A well marked form, reminding one of *A. expatriatus;* the depressed form, very open umbilicus, and scarcely distinguishable constriction are all good characters.

ALYCAEUS HUNGERFORDIANUS, n. sp.

Shell depressed, in shape resembling the preceding, but markedly less openly umbilicate; solid, more or less of a pinkish hue, irregularly spirally striate on the upper two whorls, then distantly ribbed, the ribs becoming gradually more acutely raised, and consequently more prominent, a little more close-set at the sutural tube, the difference not being very noticeable as in the preceding, ribs behind the peristome acute, prominent, distant; spire scarcely elevate, apex obtuse, peculiarly, abruptly and prominently raised, slightly twisted; whorls 4 (or $4\frac{1}{2}$?), compressedly convex, having a slightly subangulate appearance at base, where the sculpture is as well defined as it is above; constriction slightly developed, rather produced, much as in *A. stoliczkii,* sutural tube short as in the preceding; aperture circular, peristome remarkably thickened, generally distinctly triple, but sometimes only double, forming a slight projection over the umbilical area.

Diam. 4, alt. 2 mil.

Found tolerably abundant at Tamsui by Surgeon-Major R Hungerford; the first species described from Formosa belonging to the section *Charax*, the only other species known being *Aly. (Dioryx) swinhoei*, H. Adams.

DIPLOMMATINA HUNGERFORDIANA, n. sp.

Dextral, imperforate, conically ovate, rather solid, of a golden brown colour, sometimes white or nearly so; spire conical, not attenuate, apex obtuse, suture impressed; whorls 6 tumidly, convexly swollen, the upper ones lightly, regularly striate, the striation almost obsolete on the antepenultimate whorl and altogether so on the last one; aperture nearly circular, margins joined with a beautifully arched callosity, conspicuously raised and thus defined on its outer margin, the double peristome usually of a bright orange colour is boldly and evenly rounded, the columellar margin is scarcely oblique, only very slightly subangulate at base, with a tolerably prominent fold or tooth.

Long. 3, diam. $1\frac{3}{4}$ mil.

Found by Surgeon-Major R. Hungerford at Kulung in Formosa. In sculpture it somewhat resembles *D. semisculpta*, Blf. I know no Indian species with the whorls so regular in shape and evenly rounded, the antepenultimate as usual being a little the broadest; the columellar margin is also more rounded than usual and less distinctly subangulate at its base. J. A. S. B., 1870, pl. 1, fig. 3 A. (*D. sherfaiensis*) gives a fair idea of it; the peristome is, however, very different, being boldly and evenly rounded, very broadly reflected, its duplication giving it a sulcate appearance as in J. A. S. B., 1875, pl. VI, fig. 4, (*D. burti*); viewed from the side this duplication does not show at all, as for instance, *loc. cit.* 1870, fig. 3 B., and the peristome then appears to be simple as *loc. cit.* 1875, fig. 6, (*D. tumida*). J. A. S. B., 1875, pl. IV, fig. 5, I consider quite distinct from *D. sherfaiensis*, and I suggest for it the name *D. japvoensis*; it gives a very good idea of the shape of the whorls of my *D. hungerfordiana*; in the latter, however, the last whorl at base is less prominently ventricose. This is the first species of the genus known from Formosa; from Japan three species have been described by von Martens; Gould described two species of *Paxillus* from Hongkong and the Loo Choo Islands; no species is as yet known from China proper.

CYCLOSTOMA (TROPIDOPHORA) CALDWELLIANUM, Nevill, Pl. VI, Fig. 10.

Hand-list I, 1878, p. 305, Pouce Mn. Mauritius (semifossil), long. 31, diam. 30 mil.

Deeply, though narrowly umbilicate, globosely conical, rather fragile (at least in its subfossil state), colourless, spire conically produced, apex acute, suture more or less subcanaliculate, characteristically "fimbriate" or puckered; whorls 5 to 6, convex, the last one rather more convex above than at base, the last three whorls closely, acutely, spirally striated, striæ slightly undulating, the interstices obliquely, longitudinally and more or less subobsoletely striated, the penultimate whorl is acutely keeled in the middle and again quite at its base, the last whorl is prominently carinate at the periphery with a second keel half way between it and the suture and a third round the umbilicus, the umbilical area being spirally and irregularly keeled ; aperture rather oblique, nearly circular, peristome reflected, above peculiarly and markedly sinuate, the inflection (or " sinus") broad and shallow and at some slight distance from the body whorl, afterwards boldly rounded, columellar margin only slightly reflected above over the umbilicus, oblique, acutely angulate at base.

Measurements of another, rather smaller specimen than the type, Alt. 26, diam. 26¼ mil.

As I have already remarked, a close ally of *C. carinatum*, Born (= *C. tricarinatum*, Sow., not *H. tricarinata*, Müller = *C. tricarinatum*, Lam., a quite different species from Madagascar) ; it can, however, be always easily distinguished by the more produced spire, much narrower umbilicus (which is more irregularly keeled), the " fimbriate" suture (as in *C. liénardi*, Morelet and *C. fimbriatum*, Lam.), the prominent and close-set spiral striation, &c. The figures in Born, Sowerby, and Reeve all depict the true *C. carinatum*, of which I consider Reeve's figure of *C. unicolor*, Pfr. as a mere variety. The Museum is indebted for two specimens of this latter form to Mr. J. Caldwell, who informs me that one of his specimens of typical *C. carinatum* was found by him with the animal still preserved and only recently dead.

Pfeiffer's figures in the Conch.-Cab. II, pl. 39, figs. 5 to 7, as "*C. unicolor*," represent a quite distinct species, (though also from Mauritius), as can be seen by a reference to his original description, "*anfr. ult. superne et medio acute carinatus*," borne out by Reeve's figure of the type specimen. I presume a similar confusion has arisen to that which I have explained with regard to the *Nanina petrosa* of Hutton and again with the *Helicarion monticola* of Pfeiffer (compare Moll. Yarkand Mission, page 15).

Probably Dr. Pfeiffer rightly supposed that he had erred in describing a mere variety of *C. carinatum*, Born, as a new species *(C. unicolor)* ; later on, finding an allied, but very distinct, species, he figured the latter in the Conch.-Cab., giving it the name of his former spurious species.

C. caldwellianum occurs abundantly, in a subfossil state, on the ascent of the Pouce Mountain, together with other extinct species of *Tropidophora* and *Omphalotropis*.

Type, Indian Museum ; also in coll. J. Caldwell.

var. SUBLAEVIS, nov.

The spiral and longitudinal striation more or less obsolete, Mauritius.

Type var. Indian Museum; also in coll. Caldwell.

var. SEXCARINATA, nov., Pl. VI, Fig. 10 A.

A very handsome, solid form, with six prominent keels on the last whorl, the interstitional striation obsolete, as in the preceding variety, columellar margin subangulately rounded, instead of oblique.

Alt. 34, diam. 35½ mil.—Mauritius.

Type var. Indian Museum; also in coll. J. Caldwell.

I may take this opportunity of recording that Mr. Caldwell possesses a variety of *C. carinatum* with four keels.

CYCLOSTOMA (TROPIDOPHORA) ERRONEUM, n. sp.

Pfeiffer, Conch.-Cab. II, pl. 39 figs. 5—7, Locality (?), as *C. unicolor* (not *C. unicolor*, Pfr., P. Z. S. 1851, or of Reeve fig. 39).

I take as my type, the abundant form represented by Pfeiffer's above quoted fig. 7; the larger variety seems to be much rarer. Though exceedingly variable, *C. erroneum* can always be easily distinguished from *C. carinatum* and its variety, the "*unicolor*" of Pfeiffer 1851 and of Reeve, by the regular and close-set spiral sulcation, without the prominent and characteristic keels of its ally; though more or less subangulate at the periphery, the whorls are always more convex, and this is especially noticeable at the base of the last whorl, which is also spirally sulcated, instead of being smooth as in *C. carinatum* and as well shown in Reeve's figure of Cuming's type of *C. unicolor;* the umbilicus is always markedly less open, as well shown in Pfeiffer's fig. 6.

Type, Indian Museum.

Alt. 21¾, diam. 24 mil.

Keel round the umbilicus almost or altogether obsolete.

M. Morelet in the Journ. de Conch. for 1877, p. 213, describes and separates under three "heads," the forms figured by Reeve and Pfeiffer, &c., which he unites as varieties of *C. unicolor;* if this be done, I consider it impossible to avoid uniting both to *C. carinatum*, from which the type of *C. unicolor* differs less than does the latter from my *C. erroneum.* Undoubtedly we have here an instance of a gradual transition from the extreme form of *C. carinatum* to the *C. unicolor*, var. *C.* of Morelet, intermediate forms of countless variability having been preserved for us in a subfossil state. It is, I think, comparatively immaterial whether we consider *C. carinatum*, *unicolor*, and *erroneum* as distinct species, or the two latter as subspecies of the first; after a careful examination of many hundreds of specimens, I think it better not to separate the true *C. unicolor* from *C. carinatum*, except as a variety, and preferable to separate the (more or less) keelless form specifically. If the latter be united, it would perhaps lead too far; the umbilicus is sometimes so much covered that *C. barclayanum* could scarcely be separated. Even *C. ligatum*, as hinted by M. Morelet, would become questionably distinct. *C. erroneum* is to be found abundantly, subfossil only, in the coralline sands, near the seashore, on the West Coast of Mauritius. My friend Mr. J. Caldwell possesses a very numerous and fine series.

var. SUBUNICOLOR, nov.

A variety which instead of being subangulate at the periphery is distinctly keeled; two or three of the spiral striae between the keel and the suture are also slightly more prominent than the others, showing a distinct tendency to *C. carinatum* and its variety; the base is, however, persistently and regularly sulcated as in my type form; this is doubtless the var. *B.* of Morelet.

Alt. 23, diam. 24½ mil.

var. SUBOCCLUSA, nov.

The columellar margin broadly reflected, almost covering the umbilicus; spiral striation more acutely raised than usual; scarcely keeled at the periphery.

Alt. 23½, diam. 24 mil.

var. SUBLIGATUM, nov.

Banded below the subangulate periphery; a small form with very fine spiral striation, which is also less developed at base.

Alt. 16¾, diam. 18¾ mil.

OMPHALOTROPIS DUPONTIANA, G. Nevill, Pl. VI, Fig. 8.

Handlist I, 1878, p. 320, Pouce Mn., Mauritius.

Openly and deeply umbilicate, rather solid, colourless and without sculpture, at least in its present subfossil state, ovately conical; spire convexly conical, very acute, with the suture somewhat excavate; whorls 6, convex, short, increasing slowly and regularly, the last one ventricose, remarkable by its shortness (it appears almost round), the base not being produced as is the case almost universally, rounded at the periphery with a very acute and well defined keel boldly and most characteristically encircling the very open umbilicus; aperture ovate, rather contracted above and dilated below, the margin not continuous, peristome scarcely thickened, regularly rounded, columellar margin lightly reflected, oblique, distinctly subangulate below, the basal margin is again indistinctly subangulate where the keel terminates.

Long. 6, diam. 4 mil.

Type, Indian Museum; subfossil, at about ¼ of the ascent of the Pouce Mn., Mauritius.

This shell was a contemporary of the subfossil *Cyclostoma caldwellianum*, Nev., *C. scabrum*, H. Ad., *C. mauritianum*, H. Ad. &c., which I found associated with it, some few inches below the surface of the soil and generally more or less under overhanging large blocks of stones. It is doubtless a remnant of the old fauna of the island and must be at least as old as the Dodo. It is a very important species, as showing one of the characters of the genus (from which indeed its name is derived) in its greatest development so far as is yet known; I allude to the keel round the umbilicus. I have named it in honour of my friend Mr. Evenor Dupont of Mauritius, who is well known for his many discoveries in Natural History in those parts. We now know that the genera *Cyclostoma*, *Omphalotropis*, *Helicina*, *Gibbus*, and *Nanina* are all very ancient inhabitants of the Mascarene Islands, as extinct subfossil forms of all of them have been described. *Helicina* appears to have died out.

OMPHALOTROPIS CALDWELLIANA, n. sp. Pl. VI, Fig. 9.

Hand-list I, 1878, p. 320, No. 7, as *Omphalotropis*, n. sp.

Distinctly umbilicate, rather solid, colourless and without sculpture, pyramidically conical; spire elongately turreted, apex rather acute, suture subcanaliculate; whorls 7, planulate, increasing very slowly and regularly, the last one short, tumidly ventricose, perfectly rounded at the periphery, umbilicus surrounded with a raised and prominent keel; aperture slightly oblique, narrowed anteriorly, margins not continuous, peristome slightly convex only, columellar margin anteriorly inflected, in the middle subangulate, then rounded and again subangulate quite at the base.

Long. 6, diam. 3 mil.

Type, Indian Museum.

Subfossil, on the ascent of the Pouce Mn., Mauritius, with *O. dupontiana*, &c. I have named this species after Mr. J. Caldwell of the Colonial Civil Service, the possessor of one of the finest collections of shells from our Eastern Regions that I know of. In shape there is some resemblance to the *O. clavulus* of Morelet, which is not mentioned in Pfeiffer's monograph!

OMPHALOTROPIS RUBENS, Quoy, Pl. VII, Fig. 12 (Copy).

Voy. Astrol. 1832, Mauritius.

I have thought it well to give a copy of the animal of this genus, taken from Adams' 'Genera,' to enable those interested to see at a glance the great differences from that of *Assiminea*, as the shells of the two genera are constantly confounded, since Dr. Pfeiffer unfortunately united them as '*Hydrocena*.'

PLECOTREMA RAPAX, Dohrn.

Malak. Blätter, 1859, Arabia, long. 6, diam. 3 mil.; Jickeli, Moll. Nord Afr., pl 7, fig. 7.

var. PRODUCTA, nov. Pl. V, Fig. 7.

A single specimen of this interesting form was found by Mr. W. T. Blanford at Annesley Bay; the spire is more cylindrical and markedly more produced in proportion, the last whorl less convexly swollen than in the typical form. The minute, longitudinal striæ, under a lens, are more distinct than usual. Anfr. 7; long. 5¼, diam. 2½ mil.

MARGARYA MELANIOIDES, Nevill, Pl. V, Fig. 1.

J. A. S. B., 1877, p. 30, Lake Tali in Yunnan, anfr. 4, long. 67, diam. 47 mil.

I have nothing to add to my original description of this remarkable form, altogether unlike any other known mollusk. I take this opportunity of recording the obligation I am under to my friend Mr. J. Schaumberg of the Geological Survey of India, for the great trouble he has been good enough to take in improving the rather crude drawings of this and of some other species represented in the plates accompanying this paper. This species has also been figured by Dr. J. Anderson, F. R. S., in his large and valuable quarto on the Zoology of Yunnan.

AMPULLARIA STOLICZKANA, Nevill, Pl. VI, Figs. 11 and 11 A.

Cat Moll. Fasc. E, 1877, Penang, alt. 54, diam. 41 mil.

I have not met with any fresh specimens of this interesting species; its nearest ally appears to be Reeve's *A. javanica*, which apparently represents an immature specimen; it is also not unlike his *A. turbinoides* from Australia (?).

PALUDINA HUNGERFORDIANA, n. sp.

Closely allied to *P. jullieni*, Deshayes, from Cambodia, the type of Mekongia, Crosse and Fischer.

Imperforate, spire short (as in *P. jullieni*), the large whorl proportionately large and tumidly swollen, scarcely (if at all) subangulate at the periphery; whorls spirally ribbed, ribs numerous, flat, more or less inclined to become obsolete; columella remarkable, being very short, almost perpendicular, pure white, very broadly and characteristically reflected.

Long. 33, diam. 26 mil.

Hab.—Canton.

Type, Indian Museum; also in coll. Surgeon-Major R. Hungerford.

PALUDINA MARTENSIANA, n. sp.

Imperforate, spire more or less shortly produced, moderately thick, of greenish brown colouration, suture rather indistinct, apex obtuse; whorls 3 to 4, planulately turreted (almost concavely), the last whorl about twice the size of the others, rounded at base, with one acute and raised spiral keel immediately below the suture and three or four others crowded together at the periphery, the preceding whorl has two of these prominent keels and both have besides, under the lens, a very minute, subobsolete, spiral striation; aperture oval, relatively rather small, not oblique, peristome scarcely thickened, but slightly convex, having a very slight subangulate appearance about the middle, columellar margin a little reflected, evenly rounded.

Long. 13½, diam. 10 mil.

Khasing District, N. China.

Type, Indian Museum; also in coll Hungerford.

I have named this species after Prof. Ed. von Martens of Berlin.

STENOTHYRA WOODMASONIANA, Nevill, Pl. VII, Fig. 8.

J. A. S. B. 1880, p. 159, Port Canning, long. 3⅓, diam. 2 mil.

STENOTHYRA HUNGERFORDIANA, Nevill, Pl. VII, Fig. 9.

J. A. S. B. 1880, p. 159, Andaman Islands, long. 2½, diam. 1⅓ mil.

STENOTHYRA BLANFORDIANA, Nevill, Pl. VII, Fig. 10.

J. A. S. B. 1880, p. 160, Chilka Lake, Port Canning and Madras, long. $3\frac{7}{10}$, diam. $2\frac{1}{10}$ mil.

BYTHINEA MORELETIANA, Nevill, Pl. VI, Fig. 14.

J. A. S. B. 1877, Yaylaymaw in Yunnan.

I have thought it advisable to give a figure of this very distinct, imperforate species, for which the Museum is indebted to Dr. J. Anderson, although there is no species which I know of with which it could possibly be confused.

BYTHINEA PHILIPPINENSIS, n. sp.

Somewhat closely resembling *B. lutea*, Gray = *B. goniostoma*, Hutton; slightly decollate, distinctly umbilicate, spire variable, sometimes very short, as in Con. Indica, Pl. XXXVII, fig. 7 *(B. goniostoma)*, sometimes moderately produced as *l. c.* fig. 6 *(B. inconspicua)*; horn-brown colour, moderately solid, suture distinct, whorls 3 to 4, convex, the last one globosely and tumidly swollen, rounded at the periphery, more or less angulate round the deep, open umbilicus; under the lens spirally, very closely striated, striæ almost microscopic, slightly undulating, subobsoletely decussated or crossed with fine, very oblique lines of growth; aperture everted, nearly round, with a more or less double peristome, which is boldly, though somewhat irregularly convex, the columellar margin is more distinctly double and slightly angulate at base, all the margins are of a not very pronounced shade of black.

Type, anfr. 2½; alt. 8, diam. 6½ mil.; another, anfr. 3½, alt. 8, diam. 6 mil.

Type, Indian Museum; also in coll. Hungerford and Dohrn.

S. Cruz, in Luzon, collected by Surgeon-Major R. Hungerford; Prof. von Martens has also, I believe, mentioned this species in the Mal. Bl. 1865.

BYTHINIA SUBPULCHELLA, n. sp., Pl. VI, Fig. 12.

Narrowly rimate, conically ventricose, of rather thin substance, slightly transparent, without sculpture, almost white, with a very slight brownish tinge here and there, suture very distinct, spire elongately drawn out, apex rather obtuse; whorls 4½, convexly ventricose, the last one tumidly and globosely swollen, about the same size as the others together, a distinct, opaque varex on the left hand side (away from the aperture) on each of the two last whorls; aperture nearly round, not oblique, with scarcely thickened, convex peristome and columellar margin nearly straight, subangulate at base.

Very variable in size; type, long. 6, diam. 4 mil.

Abundant at Kutch, where there also occurs a "var. *tenuior*."

Type, Indian Museum; also in coll. Dohrn, Temple, Joly, Blanford &c.

I have hesitated a long time as to separating this form from *B. pulchella*, Hutton. Even now, I am by no means sure it would not be better classed as a "subspecies" of it.

BYTHINEA EVEZARDI, Blanford, Pl. VI, Fig. 13.

J. A. S. B., 1880, p. 220, Lanowlee, long. 3¾, diam. 2 mil.

This is a remarkable species of the genus, well distinguished by the peculiar sculpture and umbilicus. The figure is taken from a specimen in the Museum collected by the Rev. S. B. Fairbank and labelled "Mahabaleshwar."

BYTHINEA (?) TURRITA, Blanford, Pl. VI, Fig. 15.

P. Zool. S. 1869, p. 446, "Kyoukpong," long. 6¼, diam. 3 mil., as "*Fairbankia ? (an Bithynia ?) turrita.*"

As the animal and operculum are still unknown, the generic classification of this well marked form is still open to question. The peristome is not "sinuate" above, as in the genus *Lartetia*.

FAIRBANKIA (?) FEDDENIANA, n. sp.

Imperforate, solid, turretly conoidal, white, upper whorls subacutely, spirally striate, striation on the last two whorls more or less obsolete, imparting a "quasi" malleate appearance. Spire turreted, apex broken off in all the specimens seen, suture very distinct; 5 whorls remaining, probably there would be about 8 in a quite perfect specimen, scarcely convex, increasing regularly and slowly in size, the last whorl produced at base; aperture rather small, subquadrangular, nearly perpendicular, moderately dilated at base, outer lip not reflected, bordered with a very broad and callous rib, columellar margin perpendicular, distinctly subangulate above and below, margins joined with a thick callosity.

Long. 6 (vix), diam. 2½ mil. (anfr. 5 only).

Type, Indian Museum; also in coll. Fedden.

I am indebted to Mr. F. Fedden of the Geological Survey of India for an opportunity of describing this interesting form; one of the specimens is from the coast of Kathiawar, all the others are part of a small, but remarkable collection made by the above mentioned gentleman "10 feet below the surface of the Little Rann, at the Kura salt works in northern Kathiawar."

HYDROBIA (BELGRANDIA) MILIACEA, Nevill, Pl. VII, Fig. 7.

J. A. S. B. 1880, p. 161, Port Canning, long. 2¾, diam. 1¾ mil. and var. minor, long. 2, diam. 1¼ mil.

ASSIMINEA WOODMASONIANA, Nevill, Pl. VII, Fig. 1.

J. A. S. B. 1880, p. 163, Port Canning, long. 4, diam. 2½ mil.

I have lately received a single specimen of a closely allied new form from the Andamans, discovered by Mr. F. A. de Roepstorff.

ASSIMINEA HUNGERFORDIANA, Nevill, Pl. VII, Fig. 2.

J. A. S. B. 1880, p. 165, Mouth of the Rangoon River, long. 4, diam. 2½ mil.

ASSIMINEA BEDDOMEANA, Nevill, Pl. VII, Fig. 3.

J. A. S. B. 1880, p. 164, Port Canning, long. 3, diam. 3½ mil.

The second species, only, as yet known of the short spired, or "Helicoid," section of the Genus, the other being *A. helicoides*, Gundl. from Cuba.

ASSIMINEA THEOBALDIANA, Nevill, Pl. VII, Fig. 4.

J. A. S. B. 1880, p. 164, Port Canning, long. 4½, diam. 3 mil.

ASSIMINEA MICROSCULPTA, Nevill, Pl. VII, Fig. 5.

J. A. S. B. 1880, p. 165, Port Canning, long. 2¾, diam. 1¾ mil.

Mr. de Roepstorff has also sent me from the Andamans a single, but unfortunately not adult, specimen of a species allied to *A. theobaldiana* and

A. microsculpta. This specimen somewhat answers to Mr. Blanford's description of *Realia decussata.*

ASSIMINEA BREVICULA, Pfeiffer, Pl. VII, Figs. 6—6 A.

P. Zool. S. 1854, as *Hydrocena brevicula,* from Singapore; var. = *A. miniata,* Martens, Ann. Mag. XVII, 1866, p. 206, Singapore, long. 9, diam. 4½ mil.; var. = *A. rubella,* Blf., Ann. Mag. 1867, Irawady Delta, long. 5, diam. 4 mil.; var. = *Hydrocena marginata,* Morelet, J. de C. 1855, Bangkok, long. 6—8, diam. 4—5½ mil.; var.? = *A. rubida,* Gould, P. Bost. S. 1859, Loo Choo Islands.

A very abundant, variable and widely distributed species; there are specimens in the Museum from Singapore, Malacca, Andamans, Borneo, Irawady Delta, Arakan, Philippines, and Amoy.

The Port Canning specimens are mostly of the typical colouration "*corneo-fulva,*" and measure—long. 7, diam. 5 mil.; there are also subvarieties, *bicolor* and *bibalteata.* Mons. Morelet's remarks on this species, Sér Conch. IV, p. 294, are excellent "*cette coquille peut varier de 6 à 9½ mil., de couleur fauve ou rougeâtre;*" I will add that it varies also with regard to the infrasutural impressed lines, of which there are sometimes two, as in typical *A. rubella* and *miniata,* sometimes only one, as in *A. brevicula* and *marginata;* at Port Canning both exist together, with every possible intervening form. I am indebted to Mr. Wood-Mason for the figures now given of this small mollusk. Von Martens describes his *A. miniata* as having the head and foot of a pale red colour.

PALUDOMUS BLANFORDIANA, G. Nevill, Pl. V, Figs. 3—3 A.

J. A. S. B. 1877, p. 37, Ava, long. 19, diam. 15 and var. from Gowhatty, long. 20, diam. 15 mil.; Con. Indica, pl. 108, fig. 9, "Tongoop," as "*P. labiosa*" (not of Benson).

I think the figures now given will prevent this species ever again being confused with its undoubtedly distinct Tenasserim ally, the true *P. labiosa* of Benson. I named the species after Mr. H. F. Blanford, to whom I am much indebted for permission to make free use of his collection, which he has temporarily deposited under my charge in the Museum, a privilege I much value owing to the great care and accuracy with which the exact localities of the species have been recorded.

PALUDOMUS PETROSA, Gould, Pl. V, Fig. 5.

P. Boston Soc. 1843, Tavoy, as *Paludina petrosa;* = *Paludomus labiosa,* Benson, Ann. Mag. 1856, Tenasserim Valley, long. 13, diam. 11 mil. (not of the Con. Indica, or Conch.-Cab.).

After a careful study of Gould's original description, I have no hesitation in uniting his species to Benson's, especially as both are from the Province of Tenasserim; Benson probably overlooked it, owing to its having been described as a species of *Paludina*. My figure is from an original, typical specimen of *P. labiosa;* evidently the form was unknown to Mr. Hanley, or it would, I feel sure, have been separated by him from the preceding species; this is the more to be regretted as Mr. Theobald, his colleague, was in possession of typical specimens of *P. labiosa*.

PALUDOMUS ANDERSONIANA, G. Nevill, Pl. V, Fig. 2.

J. A. S. B. 1877, p. 35, Ava &c., anfr. 7—long. 29, diam. 22 mil.

The type form of this fine and well marked species is not represented in M. Brot's Monograph; it was found by Dr. J. Anderson, in whose honour I have named it, in tolerable abundance in Upper Burma.

var. MYADOUNGENSIS, nov.

A small, decollate, and prettily marked variety, with the whorls markedly more rounded, found by Dr. Anderson at Myadoung, near the Yunnan frontier.

Long. 15, diam. 12 mil.

subspecies PEGUENSIS, G. Nevill.

J. A. S. B. 1877, p. 35, Pegu, long. 21, diam. 16 mil.; Con. Indica, pl. 108, fig. 6, as "*P. regulata*, Bens. var."; Brot, Conch.-Cab. II, 1877, pl. 7, figs. 2—3, as "*P. andersoniana*, Nev. var."

M. Brot has given a full account of this form in his valuable and important monograph of the genus, which, with his equally carefully and fully worked out monograph of *Melania*, I have found of the greatest assistance in cataloguing the Museum species of these difficult genera. Specimens of this variety, or rather species, are labelled from "Pegu Yoma," in Mr. H. F. Blanford's fine collection of *Paludomus*.

subvar. NANA, nov.

Spiral sculpture a trifle less distinct; long. 15, diam. 11 mil.; also from Pegu.

PALUDOMUS BURMANICA, G. Nevill, Pl. V, Fig. 4.

J. A. S. B. 1877, Yaylaymaw and Mandalay; Brot, Conch.-Cab. II, pl. 8, fig. 12 (spec. juven.).

It is probably a young specimen from Mandalay, which M. Brot has figured as above; Dr. Stoliczka sent a few indifferent specimens in exchange to the dealer Landauer, together with some of Blanford's *Melania iravadica*, a young specimen of which has also been figured by M. Brot.

LARINA CINCTA, G. Nevill, Pl V, Fig. 6.

Cat. Moll. Fasc. E, 1877, Pooree, alt. 5¼, diam. 3½ mil.

I have nothing to add to my original description of this species; with regard, however, to *Larina*, I may point out as a synonym of it the genus described under the name of '*Robinsonia*' by my brother, Hugh Nevill (Proc. Ceylon Asiat. Soc., 1869), the two typical species of which I figured in this Journal for 1871, pl. 1, figs. 5 and 6; the latter, *Larina* (= *Robinsonia*) *pusilla*, Nev., is evidently very closely allied to my *L. cincta*, but can apparently be distinguished by the less produced spire (the apical whorls especially being less prominently exserted), the larger and less deflected aperture, and the more ventricose last whorl. *Larina (= Robinsonia) ceylonica*, Nev. is exceedingly close to Blanford's figure of *L. burmana* in this Journal for 1867, pl. 13, fig. 1 and appears to be only distinguished by its more broadly transverse shape, and it is probably only a variety of it.

RISSOINA BAXTERIANA, n. sp.

Thick, solid, smooth and shining, shortly turreted, white, spire conically ovate, moderately produced, suture excavate, apex somewhat bluntly pointed; whorls 5½, turretedly planulate, the last four distantly ribbed longitudinally, ribs nearly perpendicular, except on the last whorl, where they are subabruptly and obliquely angled at the periphery, disappearing altogether at some little distance from the base in a broad, somewhat superficial groove, which is below encircled with a rather indistinct, raised, transverse keel, throughout the ribs are bisected with transverse striæ, well developed at the points of intersection, which thus become nodulose; the aperture is perpendicular, without basal canaliculation, broader at base, with the peristome rather acute, but slightly convex and the columellar margin straight, subangulate at base; I can perceive no callosity joining the margins in the specimens I have examined.

Long. 3, diam. 1½ mil.

Found in sand from Roweiah, Red Sea, rare, by Mr. J. B. Baxter, F. Z. S., in whose honour I have named this most distinct small form, altogether unlike any species I know; in sculpture, the *R. nodicincta* of A. Adams, from the Philippines, is the only one at all resembling it.

Type, Indian Museum; also in coll. Baxter and Weinkauff.

RISSOINA ORIENTALIS, n. sp.

Thick, smooth, polished and shining; white, sometimes encircled with a single brown band, spire conically ovate, not much produced, with the suture distinct and the apex obtusely mammillate; whorls 6½ to 7, convex, the first three without sculpture, the other four longitudinally rather distantly and regularly ribbed, ribs continuous (or almost so), very broad and massive, slightly flexuous, the last whorl has 11 of these ribs, continued to its base; aperture ovate, slightly oblique, without any basal canaliculation, with the margins much thickened and continuous, joined by a well marked callosity.

Long. 2¾, diam. 1 mil.

Abundant at Ceylon, also Mauritius, Andamans, Bourbon, Aden, and Roweiah.

Type, Indian Museum (from Ceylon); also in coll. Weinkauff, Dohrn, Hungerford, and Baxter.

This pretty little species is the type of my section, or subgenus, *Schwartziella; R. orientalis* has hitherto been confused by Herr Schwartz von Mohrenstern and other conchologists with its close ally, the *R. scalariformis*, C. B. Adams, from Panama. It can, however, be sufficiently distinguished by its less elongate form, of one whorl less, and especially by the mammillate instead of "acute" apex, the aperture is less oblique, the ribs bluntly broad, instead of "acute," &c.

After a long examination under a lens, I am unable to detect any signs of transverse striation in my Ceylon specimens, though they are in fresh and perfect condition.

RISSOINA BLANFORDIANA, n. sp. Pl. VI, Fig. 16.

Lanceolately produced, in shape resembling *R. deshayesi*, Schwartz, but the more convex whorls give it a less turreted appearance; white, rather solid, spire conically elongate, very acute, apex not mammillate, suture rather indistinct, especially on the upper whorls; whorls 10 to 11, convexly turreted, longitudinally ribbed with rather distant, acutely raised, almost straight ribs, which are evenly decussated with a transverse, rather distant striation, the striæ of approximately the same developement as the ribs, but slightly subnodulose at the points of intersection, the last whorl is short and convex much as in *R. deshayesi*, but with only 13—14 ribs instead of "22—24," there are 6 of the regular, well developed transverse striæ and two others much finer and more crowded together next the suture, the basal transverse rib is evenly granulose, moderately developed; aperture rather large, with the peristome boldly rounded, somewhat dilated towards the base, the columellar emargination is broad, but shallow and very unlike the markedly incised one of its ally, compared by Herr Schwartz to that of a *Cerithium;* the outer lip is only moderately thickened.

Long. 9¾, diam. 3¾ mil.

Annesley Bay, Red Sea; rare.

Type, Indian Museum.

RISSOINA WEINKAUFFIANA, n. sp.

Lanceolately and turretly produced, of a brownish white colour, spire acuminate, with the apex minutely mammillate, composed of 2½ nucleolar whorls, which are perfectly smooth and of a milky white colour; whorls 9½ (except the first 2½) longitudinally, evenly ribbed, ribs close-set, slightly flexuous, a little more numerous and less developed on the last whorl, which under the lens shows two spiral, subobsolete striæ, the upper one of which starts from the top of the peristome, otherwise there is no spiral sculpture, no groove at base but girt with a very thick callous rib, apparently smooth, but under a powerful lens very minutely striate with a slight "beading" at the top; aperture polished, shining, thickened, broadly emarginate at columellar base, peristome evenly rounded, with a thick callosity behind it.

Long. 6¾, diam. 2½ mil.

I only know of one closely allied species, a smaller form, *R. funiculata*, Souverbie, 1865, from New Caledonia, this species is also found at the Andamans; I have named this well marked form in honour of Dr. H. C. Weinkauff of Kreuznach, who is now editing a Monograph of the genus for the new edition of the Conchylien-Cabinet; I found the species alive under stones at Port Blair, at extreme low water; it was tolerably abundant.

RISSOINA NEVILLIANA, Weinkauff.

Conch.-Cab. II, 1881, Kowloon.

Shell large, very thick and solid, lanceolately produced; apical whorls wanting, 7½ remaining, regularly pyramidally turreted, the last one relatively very little larger or more tumid than the penultimate, the upper three whorls regularly, and evenly longitudinally ribbed, ribs thick, close-set, slightly flexuous, the last four whorls with similar, but thicker, less flexuous and more unequal ribs, each of the last two having also, in a line with the outer lip, two of these ribs united forming very broad and thickened varices, the last whorl but two has a similar but less prominent one, out of the line of the others and quite at the back of the shell, the whorl above it again has a similar but more developed varex in front, almost in a line with the columella; throughout, under the lens, regularly and very finely tranversely striated, at the base of the last whorl the ribs become obsolete and the transverse striæ incised and well developed sulcations, on the upper portion of the same whorl the longitudinal ribs are distinctly and characteristically, though somewhat obsoletely, biangulate; aperture shallow and small, not everted, within polished and shining, with two or three denticulations, not canaliculate; columellar margin nearly upright, slightly twisted, a trifle bent back and rounded at base, outer lip thickened, smooth and evenly rounded, margins joined with a well developed callosity, the peristome behind is much thickened and forms a similar varex to those already described.

Long. 13½, diam. 4½ mil. (wanting the apical whorls).

Kowloon, opposite Hongkong.

As will be seen from the above, this fine species, for which I am indebted to Surgeon-Major R. Hungerford, belongs to the typical section of *Rissoina*, that is there is no canaliculation at base of the aperture.

The *R villica* of Gould, as figured by Sowerby, appears to be its nearest ally. *R. pyramidalis* is also of a somewhat similar type.

RISSOINA SUBLAEVIGATA, n. sp.

Shell rather stout, smooth, shining, pellucid; spire relatively rather short, apex very remarkable, mammillate, strongly inclined to the left, as in the family *Pyramellidæ;* an opaque, rather broad, not incised band, relatively unusually remote from the suture, so much so that it is almost exactly central in the penultimate whorl; six whorls, much more convexly swollen than in the preceding; aperture unusually straight, that is not everted, peristome thickened, columella callously reflected, considerably more perpendicular than in Schwartz's fig. 79 *R. laevigata*, which otherwise, except for the characters of the apex and opaque submarginate band, well represents the species.

Long. 3½, diam. 1½ mil.

Andamans; coll. G. Nevill, Esq.

Under coral blocks, at low-water, Ross Island; Herr Schwartz considered this form a variety of *R. laevigata*, C. B. Adams, from Jamaica. The species probably has a wide range, it will very likely prove to be the shell mentioned by Herr Schwartz, page 111, as *R. laevigata*, from Steward's Island (E. of Solomon Islands).

RISSOINA PSEUDOBRYEREA, n. sp.

? Schwartz, *Mon. Rissoina*, pl. 5, fig. 36 A., Mauritius, as *R. bryerea*, var. (not fig. 36, *R. bryerea*, Mtg., West Indies).

Turreted, very thick and solid, white; spire conical, abruptly pointed, suture excavate, apex rather obtuse; whorls 6, turretly planulate, the last four evenly ribbed longitudinally, the ribs very massive and broad, rather distant, quite perpendicular, terminating some little distance from the base (not the case in *R. bryerea*), finely and rather closely decussated with a transverse striation, especially noticeable in the interstices, towards the base where the longitudinal ribs cease, there are three (or four?) well developed transverse ribs, but slightly (if at all) subnodulose, the last whorl is proportionately long, more so than in the above quoted figure, it has 11 ribs (18 to 22 in *R. bryerea*, fide Schw.); aperture small, subquadrate, no basal emargination, outer lip very much thickened, not dilated, evenly rounded at base.

Long. 5½, diam. 2 mil.

Rare, in sand from Roweiah, Red Sea.

Type, Indian Museum.

This species discovered by my friend Mr. J. B. Baxter, is an interesting addition to the group II, section B. of Schwartz, which I now propose to distinguish by the name of *Schwartziella*, at once recognizable by the absence of any basal emargination within the aperture. The differences from true *R. bryerea*, as can be seen from the above, are too many and too marked to require special, further reference; but it becomes a question whether Schwartz's above quoted fig. A represents or not the present species? I am inclined to believe from the acute peristome &c., that it represents a not adult specimen, readily distinguished by the different shape, transverse striation, less numerous ribs &c. from *R. bryerea*. The most important difference in it from the Roweiah form is the absence of the basal three transverse ribs and corresponding abrupt termination of the longitudinal ribs; these latter are also thicker, straighter &c., the peristome much broader and aperture smaller.

AMPHITHALMUS PELLYÆ, n. sp.

Of almost microscopic size, imperforate, solid, smooth, polished and shining, of a rich chesnut-brown colour, ovately oblong; spire shortly and ventricosely conical, suture distinct, apex exceedingly obtuse; whorls 3½, very convex, last whorl produced, regularly ovate, about ⅔ the size of the whole shell, brought forward at the aperture in a highly characteristic manner, exactly as in the genus *Stenothyra*; aperture almost circular, with continuous and much thickened margins, stained of a very dark mahogany colour within the aperture, behind the peristome there is a "rib-like" thickening, showing through externally in an opaque manner.

Long. 1⅓, diam. ½ mil.

In sand, from near Adelaide, South Australia.

Type, Indian Museum.

This very interesting minute form, of a little known genus, I have named after its discoverer, Miss Pelly, to whom I am indebted for the type specimen. The other shells found with it were all of a purely marine type, there being no brackish-water forms amongst them. *Barleeia (?) microthyra*, Martens, Möbius Reise &c., Pl. XX, fig. 18, from Mauritius is another and most closely allied species of *Amphithalmus*; *A pellyæ* is readily distinguished by the fewer whorls, more obtuse apex, more convex whorls, the last especially being much more regularly, ovately produced and much longer in proportion, its *Stenothyra*-like deflection in front of the aperture, so accurately pointed out by Professor von Martens, is still more prominent in the Australian species. Another close ally is the ***Amphithalmus pupoides***, H. Adams, P. Z. S., 1865, from Lord Hood's Island, my late much regretted friend in his description also remarks on the resemblance to *Stenothyra*. Our Museum possesses specimens of this last, also of *A. obesus*, H. Adams, *l. c.*, and of the type species, *A. inclusus*, described by Carpenter in the Annals and Mag. XV, 1865, from California.

EXPLANATION OF THE PLATES.

PLATE V.

Fig. 1. *Margarya melanioides*, Nev., p. 155.
Fig. 2. *Paludomus andersoniana*, Nev., p. 160.
Fig. 3. *Paludomus blanfordiana*, Nev., p. 159.
Fig. 4. *Paludomus burmanica*, Nev., p. 160.
Fig. 5. *Paludomus petrosa*, Gld., p. 159.
Fig. 6. *Larina cincta*, Nev., p. 161.
Fig. 7. *Plecotrema rapax*, Dohrn, var. *producta*, Nev., p. 155.
Fig. 8. *Limnæa yunnanensis*, Nev., p. 142.
Fig. 9. *Limnæa andersoniana*, Nev., p. 142.
Fig. 10. *Succinea yarkandensis*, Nev., p. 144.
Fig. 11. *Stenogyra* [*Glessula*] *oreas*, Bens., p. 135.
Fig. 12. *Stenogyra* [*Glessula*] *blanfordiana*, Nev., p. 138.
Fig. 13. *Stenogyra* [*Glessula*] *subfusiformis*, W. T. Blf., p. 138.
Fig. 14. *Stenogyra* [*Glessula*] *jerdoni*, Bens., p. 136.
Fig. 15. *Stenogyra* [*Glessula*] *nilagirica*, Bens., p. 136.
Fig. 16*a* et *b*. *Stenogyra* [*Glessula*] *bensoniana*, Pfr., p 137.
Fig. 17*a* et *b*. *Stenogyra* [*Glessula*] *perotteti*, Pfr., p. 137.
Fig. 18*a* et *b*. *Stenogyra* [*Glessula*] *facula*, Bens., p. 137.
Fig. 19. *Stenogyra* [*Glessula*] *orophila*, Bens., p. 137.
Fig. 20. *Stenogyra* [*Glessula*] *amentum*, Bens., p. 138.
Fig. 21. *Helix* [*Ægista*] *perplanata*, Nev., p. 133.
Fig. 22. *Trochomorpha percompressa*, W. T. Blf., p. 133.
Fig. 23. *Helicarion* [*Austenia*] *magnificus*, G.-A. & Nev., p. 129.
Fig. 24. *Helicarion* [*Austenia*] *resplendens*, Nev., p. 129.

PLATE VI.

Fig. 1. *Gibbus dupontianus*, Nev., p. 130.
Fig. 2. *Buliminus* [*Cerastus*] *jickelianus*, Nev., p. 135.
Fig. 3. *Cyclophorus pealianus*, n. sp., p. 146.
The apical 2½ whorls are incorrectly represented in the figure.
Fig. 4. *Cyclophorus orites*, n. sp., p. 147.
The left-hand figure is by no means good; the last whorl is not contorted.

Fig. 5. *Alycaeus montanus*, n. sp., p. 149.

The minute sculpture is not sufficiently indicated!

Fig. 6. *Pupina hungerfordiana*, Nev., p. 148.

Fig. 7. *Cyathopoma shevaroyanum*, Bedd., p. 145.

The spiral striation is incorrectly represented on the two upper figures!

Fig. 8. *Omphalotropis dupontiana*, Nev., p. 153.

Fig. 9. *Omphalotropis caldwelliana*, n. sp., p. 154.

The spire should be more evenly planulate, the whorls are not turreted. The columella is also not reflected over the umbilicus, as in the figure.

Fig. 10. *Cyclostoma caldwellianum*, Nev., p. 150.

Fig. 10*a*. ,, ,, var. *sexcarinata*, Nev., p. 152.

Fig. 11, 11*a*. *Ampullaria stoliczkana*, Nev., p. 155.

Fig. 12. *Bythinea subpulchella*, n. sp., p. 157.

Fig. 13. *Bythinea evezardi*, W. T. Blf., p. 157.

Fig. 14. *Bythinea moreletiana*, Nev., p. 156.

The magnified figure and that of the natural size are from different specimens.

Fig. 15. *Bythinea (?) turrita*, W. T. Blf., p. 157.

The figure denoting the natural size has been overlooked by the lithographer.

Fig. 16. *Rissoina blanfordiana*, n. sp., p. 162.

Fig. 17. *Melania variabilis*, Bens., var. *pseudospinosa*, Nev.

From Samaguting in Assam.

PLATE VII.

Fig. 1. *Assiminea woodmasoniana*, Nev., p. 158.

Fig. 2. ——— *hungerfordiana*, Nev., p. 158.

Fig. 3. ——— *beddomeana*, Nev., p. 158.

Fig. 4. ——— *theobaldiana*, Nev., p. 158.

Fig. 5. ——— *microsculpta*, Nev., p. 158.

Fig. 6, 6*a*. ——— *brevicula*, Pfr., p. 159.

Fig. 7. *Hydrobia (Belgrandia) miliacea*, Nev., p. 158.

Fig. 8. *Stenothyra woodmasoniana*, Nev., p. 156.

Fig. 9. ——— *hungerfordiana*, Nev., p. 156.

Fig. 10. ——— *blanfordiana*, Nev., p. 156.

Fig. 11. *Acmella hungerfordiana*, n. sp., p. 145.

Fig. 12. *Omphalotropis rubens*, Quoy, p. 154.

XII.—*A sketch of the history of the fossils of the Indian Gondwána system.*—*By* OTTOKAR FEISTMANTEL, M. D., *Palæontologist, Geological Survey of India.*

[Received 24th June; Read 6th July, 1881.]

In a late number of this Journal[*] Mr. Lydekker published a sketch of the history of the fossil Vertebrata of India, and it is my intention now to give a similar sketch of the fossils of the Gondwána system, for the same reasons as those which Mr. Lydekker indicated in the beginning of his paper.

Before proceeding to discuss the details it will be necessary to make a few general remarks upon the Gondwána system, its importance, extent and classification. By the name Gondwána system the Geological Survey now designates what was formerly known as the Plant-bearing series.

The title was proposed by Mr. H. B. Medlicott, about 9 years ago (1872), but was not then admitted into publicity though more or less current on the Survey; since 1876 it has come into general use in print also.[†]

This system of sedimentary rocks is the most important in the peninsula, for two reasons, first because it is prominently fossiliferous and secondly because it includes the rich coal deposits for which India is so famous.

As regards the distribution of these rocks, I refer to my paper in the Records of the Geological Survey of India, just quoted, as well as to the Manual of the Geology of India, 1879 (Vol. 1, and map), from which the following may be extracted:[‡]

From Raniganj[§] these deposits stretch in detached basins up the Damuda valley,[‖] into the highlands of Chutia Nágpur.[¶] To the north of this area smaller patches also occur, as especially the Rájmahál area,[**] the Deogarh coalfields[††] and the Karharbári coalfield.[‡‡]

---

[*] J. A. S. B., Vol. XLIX, Pt. II, 1880.

[†] Feistmantel: Notes on the age of some fossil Floras in India; R. G. S. Ind. Vol. IX, p. 28, 1886.

[‡] I refer here to the distribution, because when quoting the fossils I shall have ample opportunity to mention the various deposits.

[§] This shall be hereafter always mentioned as Raniganj coalfield.

[‖] Here we have in a consecutive order from E. to W. the Jharia coalfield, the Bokharo and Ramgurh and the Káranpúra coalfields.

[¶] Of these I shall have opportunity to mention the Aurunga coalfield (Palamow)

[**] Rájmahál hills.

[††] Or Kuraun coalfield near Khurmatar, E. I. R.

[‡‡] In Hazáribágh district, near Giridhi station.

From Chutia Nágpur these rocks stretch into the valley of the Sone, constituting the great South Rewah basin. By a narrow band of the topmost group passing by Jabalpur, this area is connected with the large basin in the Sátpura range[*] on the west side of which the stratified series passes under the trap rocks of the Deccan. Some few inliers have also been detected beneath the trap further to the west in the Narbada valley.

Far to the west, plant-bearing rocks of the Gondwána system (the Umia group) have long been known to exist in Cutch (Kach), while recently rocks of the same age were discovered in the peninsula of Kathiawár by Mr. Fedden.[†]

This northern main area of the Gondwána deposits has two southern extensions. The South-Rewah basin continues through Sirguja[‡] into the Raigarh and Hingir coalfields, S. W. Bengal, towards the Talchir coalfield (Orissa) and the Athgarh[§] area below Cuttack (Katák).

From the Sátpura basin in a southern direction we meet with rocks of this system in the neighbourhood of Nágpur,[||] whence they extend into the valleys of the Wardah[¶] and Godavari rivers,[**] down to Rajamahendri.

From the Delta of the Godávari detached patches of these rocks occur also along the coast of the Carnatic (Karnatik) to Trichinopoli.[††] All these deposits are within the peninsular area of India.

Only a small portion are found in the extra-peninsular area, *i. e.*, along the base of the Eastern Himálayas, in Sikkim and Upper Assam.

The proper knowledge of this system is almost entirely due to the labours and exertions of the officers of the Geological Survey, as the number of writers, unconnected with the Survey, who have worked at either the geology or palæontology, or contributed to the collections is but a limited one. To these latter I shall refer at first. In 1828 A. Brongniart described in his "Histoire des végétaux fossiles," two species of *Glossopteris*, this was the earliest mention of this interesting genus. Professor Göppert in his "Systema filicum fossilium 1836," also described *Glossopteris*. Professor Royle in his Illustrations of the Botany &c., Himalayan Mountains, 1839, established four species from the coal-bearing rocks of the Raniganj coalfield, all four of more or less interest. Professor Morris in

---

[*] Quoted hereafter always as Sátpura basin.

[†] Feistmantel, Records G. S. India, Vol. XIII, p. 1, pp. 62-64.

[‡] The Ramkola-Tatapáni coalfields.

[§] Atgarh sandstone.

[||] Nágpur area.

[¶] Wardha valley coalfield (Upper Godávari basin.)

[**] Middle and lower Godávari basin.

[††] Here we have the South Kistna district (Vemáveram) the Sripermatur area (near Madras) and the Trichinopoli plantbeds (Utatúr plantbeds).

1840 described in Capt. Grant's paper on the geology of Cutch* some plant-remains from beds, which are at present known to be the highest of the Jurassic rocks in Cutch (Kach). Among these were two species of *Ptilophyllum*, a fossil very characteristic of the upper groups of the Gondwána system. The animal fossils were described by Sowerby, some of which, as was shown later, came also from the highest Jurassic beds. An addition to these latter was made by Capt. W. Smee.† In a paper on recent and fossil cycadeæ 1841‡ Professor Morris again describes the two species of *Ptilophyllum* from India. In Professor Ungers' "Genera et species plantarum fossilium" (1850) we also find all the species of Indian Gondwána plants, known up to that date, although some of them were differently classed. In 1850 appeared also Dr. McClelland's Report on the Geological Survey of India, 1848-49; as it, however, was not published under the present arrangement of the Geological Survey, I quote it amongst these papers. It contains figures of plants from the upper and the lower (coal-bearing) groups of the Gondwána system, amongst the latter, several forms of great interest (as ascertained later by the originals) but the drawings are so utterly wrong, that the figures are of absolutely no use for those who cannot compare the originals. The most interesting fossil was the *Zamia burdwanensis*, which from the original specimen proved to be really a *Zamieae* of the *Pterophyllum*-tribe.

Sir P. Egerton described in 1851§ a fossil fish (*Lepidotus*) from the tableland of the Deccan, in the Peninsula of India collected by Col. Sykes, to which in 1853 another species was added by Mr. Bell‖ and in 1857 two species again by Sir P. Egerton.¶

Of much greater importance were the labours of the late Rev. Mr. Hislop, in the Gondwána rocks of the vicinity of Nágpur. He collected first the very interesting *Ceratodus* teeth, which were afterwards described by the late Dr. Oldham,** he collected a reptilian skull near Mángli, south of Nágpur, which was described by Professor Owen as *Brachyops laticeps*,†† and he also collected numerous fossil plants near Nágpur, (Kámthi), Bháratwáda, Silewára and Mángli, which were described by Sir Charles Bunbury in 1861.‡‡ Of the many papers by Mr. Hislop I need only mention those on the age of the coal strata in Western Bengal and Central India ;* on the geology and fossils of the neighbourhood of Nágpur,† which he wrote together with Mr. Hunter ; that on the connection of the Umrét coalbeds with the plantbeds of Nágpur,‡ and that on the age of the fossiliferous, thin-bedded sandstones and coal of the province of Nágpur in India,§ which was followed by a supplemental note in 1862.

---

* Transact. Geol. Soc. Lond. Ser. 2, Vol. V.

† Transact. Geol. Soc. Lond. Vol. V, 2d. Ser.

‡ Ann. and Mag. Nat. H. Vol. VII, p. 110.

§ Qu. J. Geol. Soc. London, Vol. VII, p. 272, pl. XV.

‖ Qu. J. Geol. Soc. London, Vol. IX, p. 351.

¶ Ibidem, Vol. X, p. 371.

** Mem. Geol. Surv. of India, Vol. I, 296, et seq. Plates.

†† Qu. J. G. Soc. Lond. Vol. XI, p. 37, Pl. II.

‡‡ Ibidem Vol. XVII, p. 325, seq. Pls. VIII-XII.

In a paper by Baron de Zigno, entitled " Observations on the Flora of the Oolites,"‖ he also makes general remarks on the Indian fossil Floras placing them all with the Oolite formation.

In the Proceedings of the Austrian Geological Institute (Verhandlungen der k. k. Geologischen Reichsanstalt) for the year 1861-62, there is a note upon the first 35 plates of the Rájmahál plants, which states, that the figures of *Zamites*, *Pterophyllum*, *Pecopteris*, *Taeniopteris* etc., agree with Austrian Keuper plants.

In another paper entitled " Sopra depositi di piante fossili del America settentrionale delle Inde e dell Australia, etc. " 1862, Baron de Zigno has attributed a liassic age to the flora of the Rájmahál group.

In the same year (1862) Professor R. Jones published his Monograph of fossil Estheriae¶ wherein also the *Estheriae* of the Indian Gondwána system are described, especially *E. mangaliensis*, Jon., which is so abundant in the Mángli shales.

Here I have also to mention Professor Morris as co-author of a work on the Rájmahál Flora (1862) for although it was published in the Palæontologia Indica, he was not connected with the Geological Survey.

In 1864 a reptilian fossil, said to belong to the genus *Archegosaurus* was collected by Major Gowan near Bijori in the Sátpura basin.**

Ettingshausen in his great work on the comparison of living with fossil ferns,†† classes our *Taeniopteris lata* and *T. morrisi* (now *Macrotaeniopteris*) from the Rájmahál group, with *Acrostichum*, and writes of that formation as being liassic.

I should also refer here to Professor Huxley's paper " on the vertebrate fossils from the Panchet rocks near Raniganj, Bengal,‡‡ for although the specimens were collected by officers of the Geological Survey and were described in the Palæontologia Indica, yet the paper is by an author unconnected with the Survey.

---

* J. As. Soc. Bengal, 1855, Vol. XXIV, p. 347.

† Qu. J. Geol. Soc. London, Vol. XI, with map.

‡ Ibid. Geol. Soc. London, Vol. XI, p. 555.

§ Ibid. Vol. XVII, p. 346 ; supplm. note, in Vol. XVIII, p. 36.

‖ Ibid. Vol. XVI, p. 110.

¶ Palæontographical Society, 1862. An abstract of the same is in Qu. J. G. Soc. London, Vol. XIX, p. 140 &c.

** J. A S. B. XXXIII, 1864, pp. 336, 442.

†† Die Farrenkräuter der Jetztwelt &c., Wien. 1865.

‡‡ Pal. Indica, Ser. IV. 1. 1865.

In a later paper on *Hyperodapedon** Professor Huxley also refers to the same genus in India where it occurs in beds together with the before mentioned *Ceratodus;* in a further paper on the classification of the *Dinosauria*, with observations on the Dinosauria of the Trias,† he also discusses (p. 48), the Indian *Dinosauria*, and in a still more recent paper on *Stagonolepis Robertsoni* and on the evolution of *Crocodilia*‡ he mentions the Indian *Parasuchus* stating that it is very close to *Belodon*.

In Professor Schimper's "Traité de Paléont. végétale," 1869-1874, most of the fossil plants, known up to that date from the Gondwána system, are also quoted, but those of the Rájmahál and Damuda series are wrongly classed as being of the same (oolitic) age.

Sir Philip Egerton and Professor Miall, have recently (1878) examined, the former the ganoid fishes from the Deccan and the latter the *Ceratodus* teeth from Malédi and the results are published in the Palæontologia Indica, Ser. IV, 2, 1878.

These are about the most important papers wherein plants or animals of the Gondwána system have been referred to or described by authors who were not connected with the Geological Survey.

Quite recently we have a paper by Dr. W. Saise on "the Kurhurbali coalfield."

Those who have contributed to the collections of the Survey, are not numerous. The first is the late Rev. Mr. Hislop, who contributed fossil fish and plants; and I have especially to mention the contributions in recent times of Mr. J. I. Whitty, C. E., late Superintendent, Kurhurbali (Karharbári) collieries, Giridhi, Mr. W. G. Olpherts, C. E., the present manager, and Mr. N. Miller, inspector of the collieries at the same place.

If only some of the other managers and inspectors of collieries in India or others who have an opportunity of doing so, would pay a little attention to the fossil remains contained in the rocks accompanying the coal-seams, many an interesting specimen might be procured. But as the matter now stands the greatest portion of the collection of fossils from this system has been brought together by the officers of the Survey, to whom also the knowledge of the numerous deposits of this system is solely due.

---

* Qu. J. G. Soc. London, Vol. XXV, p. 138, &c.

† Qu. J. G. Soc. London, Vol. XXVI, pp. 32, et seq. 1870.

‡ Ibid. Vol. XXXI, p. 423, &c.

Most of them who have visited areas where rocks belonging to the system occur, have collected fossils and contributed papers towards the knowledge of its geology, others again towards that of its palæontology. As the respective papers are chiefly contained in the publications of the Geological Survey, it is sufficient to refer to these without enumerating the papers in detail. They are contained in the Records and Memoirs of the Geological Survey as well as in some of the volumes of the Palæontologia Indica. I may especially mention the papers of Mr. W. T. Blanford (in Memoirs and Records), W. Theobald (Memoirs and Records), Thomas Oldham (Memoirs, Records and Palæontologia) J. G. Medlicott (Memoirs), T. W. H. Hughes (Memoirs and Records), H. B. Medlicott (Records and Memoirs) V. Ball (Memoirs and Records) A. B. Wynne (Memoirs and Records) W. King (Records and Memoirs) R. B. Foote (Memoirs and Records) F. R. Mallet (Memoirs) C. L. Griesbach (Memoirs). I have myself contributed papers on Gondwána fossils to the Records and to the Palæontologia Indica and Mr. Lydekker has described some of the vertebrate animals of this system, also in Records and Palæontologia Indica.

A detailed account of the various features of this system, as known up to 1879, is to be found in the Manual of Geology of India, to which I particularly refer. Of papers referring to the Gondwána system, published by officers of the Geological Survey elsewhere than in the Survey publications, I have especially to mention Mr. V. Ball's "Jungle life" 1879, and his paper "On the coalfields and coal production of India" 1879.* I have already contributed a paper on Raniganj plants to the Society's Journal in 1876† and Mr. R. Lydekker, as mentioned above, published in the same Journal a Sketch of the history of the fossil Vertebrata of India where also the Vertebrate fossils of the Gondwána system (*Pisces*, *Batrachia* and *Reptilia*) are referred to.

I have to mention at last, that some officers of the survey collected fossils in various districts, though they have not published papers on the same, thus Mr. V. Ball collected largely in the Raniganj field (Raniganj and Panchet groups) also in the Sátpura basin; Mr. F. Fedden near Nágpur, Isapur, south of Chanda (Wardha valley coalfield), in Kathiawár and in Kach, and Mr. C. A. Hacket in the Sátpura and South Rewah basins.

I shall now make a few remarks on the stratigraphical divisions, as I shall have to refer to them, when enumerating hereafter the plants.

We have at first divisions into "upper" and "lower" portions of the Gondwána system; but here it must be remembered that this classification is not to be taken in the rigid sense, which formerly used to be the case with reference to the Mahádeva and Damuda series ; for we know now that one (and probably two) of the most characteristic plants of the "lower" Gondwána portion *i. e.*, *Glossopteris* passes freely into the "upper" portion, so that from this point of view there is a passage from the "lower" into the "upper" which view is also borne out in several basins by the geological relations. On the other hand, however, it is only fair to state, that the most characteristic plant of the "upper" Gondwánas, *i. e.*, the small cycadaceous plant *Ptilophyllum*, has not hitherto been observed in any bed of the "lower" Gondwánas.

---

* Scientific Proceedings of the Royal Dublin Society, 21st April 1879.

† Vol. XLV. Based upon a collection of plants made by Mr. J. Wood-Mason.

Within these two broad divisions of the Gondwána system minor groups have been distinguished in the various basins of the system, of which a synopsis may be thus represented.

A. *Upper portion of the Gondwána system.*

Jabalpur division.*	Umia group = Tripetty sandstones.
	Chikiala sandstones.
	Jabalpur group.
	Bagra group.
Intermediate groups.*	Kota-Maléri beds = Denwa group.
	? Chari group.
	Ragavapuram = Vemáveram =
	Sripermatúr = Utatúr plantbeds.
Rájmahál division.*	Rájmahál group = Athgarh sandstones =
	Budawáda group = Sironcha sandstone =
	Pachmari sandstone = Dubrájpur group.

B. *Lower portion of the Gondwána system.*

a. Panchet division.†	Panchet group and = Almod beds.	
b. Damuda division.†	Mángli shales, Kámthi and Raniganj group and Bijori horizon.	
	Iron shales (Motur horizon.)	
	Barákar group.	
c. Talchir division.†	Karharbári beds—	
	Talchir shales—	Talchir group.
	Boulder bed	

---

* These three divisions are proposed by myself.

† These three divisions were introduced by Mr. W. T. Blanford, 1878.

With regard to the fossil contents of these several groups, I have to make the following remarks :

a. JABALPUR DIVISION.

Umia group.—A name proposed by Dr. Stoliczka, for the uppermost Jurassic beds in Kach. It contains marine animals, plants (*Ptilophyllum*) ; a jaw of *Plesiosaurus* (*indicus*) was also found.

Recently Mr. Fedden recognised the same group in Kathiawár, although it shows there a somewhat closer relation to the next group.

Marine representatives of it are the Tripetty sandstones of Mr. W. King ; and the Chikiala sandstones (unfossiliferous) of the Upper Godávari basin (C. Pr.) are probably representatives of these latter.

Jabalpur group.—1871. Oldham, Geology of the Central Provinces, Rec. Geol. Survey of India, Vol. IV, p. 75.

The uppermost group of the Gondwána system in the South Rewah and Sátpura basin, called so from the town of Jabalpur, the terminus of the East Indian Railway. It contains plant-remains only. In South Rewah it contains some species which afterwards become very numerous in the next lower group (*Sripermatur, Vemáveram*), and in shales from the Sher river, Sátpura basin, specimens of *Glossopteris*, a lower Gondwána fossil, were identified.

Bágra group.—1872, H. B. Medlicott: Notes on the Sátpura Basin, Mem. G. S. I. Vol. X, pp. 133, 150.

No fossils have been found hitherto in this group ; and no representatives of it have been met with elsewhere ; called so from fort Bagra on the G. I. P. Railway.

b. INTERMEDIATE GROUPS.

Kota-Maléri group.—1876, Hughes : Rec. G. S. I. Vol. IX, Pt. 3.

1877, Hughes : The Wardha valley coalfield, Mem. G. S. I. Vol. XIII, Pt. 1, p. 81.

1877, W. King, Rec. G. S. I. Vol. X, Pt. 2, p. 58.

This group (composed of two horizons) contains interesting terrestrial and freshwater fossils (reptiles and fishes). The red clays at Maléri (with reptiles and Ceratodus teeth) are, however, considered lower than the limestones of Kota (with ganoid fishes). The group takes its name from the localities Kota (near Sironcha, Cent. Prov.) and Maléri middle Godávari basin, south of Chanda.

The plant-beds of Chirakunt, (middle Godávari basin, Cent. Prov.), are on the same horizon and these plants are of the same character as those of some other groups to be mentioned presently.

This group has hitherto been only known from the C. Provinces (upper and middle Godávari basin), till quite recently, when, Mr. Hughes discovered representatives of the Maléri clays in the South Rewah basin (near Tiki, 81° 25′ long. ; 23° 56′ lat.), with the same reptiles, but without *Ceratodus.*

The Denwa group of the Sátpura basin* appears to be a representative of the (Kota) Maléri group ; a *Parasuchian*† scute was procured from the same.

There are several other groups which have probably to be placed on the same horizon, which I shall also quote under special headings.

Chari group.—Another group, the third from above, of the Kach Jura, proposed by Dr. Stoliczka. Vertebrae of a *Parasuchian* crocodile‡ were found, which tend to correlate this group with the Denwa group.

Sripermatúr group.—1873, Foote, Geology of Madras, Mem. G. S. I. Vol. X,p. 63, et seq.

A group of rocks in the neighbourhood of Madras, which contains marine animals and plants. By its fossil remains this group is correlated with the Vemáveram shales§ (Vemáveram, 12 miles north north-east of Ongole, S. Kistna country), the Utatúr plant beds|| (Utatúr, Trichinopoly district) and the Ragavapuram shales¶ (Ragavapuram 27 miles north-east of Ellore and West of Rajamahendry, Lower Godávari.) With these latter the plant beds of Chirakunt (see ante) have to be correlated and from the geological position of these two latter groups, one must also judge of that of the others. They are all, I think somewhat higher than the Rájmahál group proper.

c. RÁJMAHÁL DIVISION.

*Rájmahál group*** (in the restricted sense).

1877, V. Ball, Geology of the Rájmahál hills, Mem. G. S. I. Vol. XIII, p. 55, (209).

This is the lowest group of the fossiliferous beds of the Upper Gondwánas. It is developed typically in the Rájmahál hills, where it is highly fossiliferous, containing a rich and varied Flora.††

The sandstones of Golapili (near Ellore,) South Godávari district‡‡ are true representatives of the typical Rájmahál group. They contain a Flora only.

---

* H. B. Medlicott, Mem. G. S. I. Vol. X.

† Lydekker, Pal. Indica, Ser. IV, 2, p. 30, Pl. VI, fig. 8.

‡ Lydekker, ibid. p. 31.

§ 1879, Foote, Mem. G. S. I. Vol. XVI, pt. 1, pp. 60, 66.

|| 1873, Foote, Mem. G. S. I. Vol. X, p. 63, and 1878, Rec. G. S. I. Vol. XI, p. 258.

¶ 1879, Foote, Mem. G. S. I. Vol. XVI, pt. 1, p. 76.

** This group is not to be mistaken for "Rájmahál Series" which included several groups and was almost tantamount with what now is known as Upper Gondwánas minus the Mahádevas, then considered distinct.

†† Palæontol. ind., Ser. II, 1862-1877 Gondwána flora, Vol. I, 1880.

‡‡ 1874, King Rec. G. S. I. Vol. VII, p. 159 ; Gondw. Flora, Vol. I.

The Athgarh sandstone (near Katák in Orissa) also represents the Rájmahál group.

On about the same horizon the following have most probably to be placed:

The "Pachmari sandstones,"* base of the Mahádeva in the Sátpura basin without fossils; the "Dubrajpúr group"† of the Rájmahál hills, which so far as is known with certainty, contains the genus *Ptilophyllum* only; the Sironcha sandstones,‡ near Anáram, on the Pranhita river, Central Provinces, with fragmentary plant remains (conifers); and lastly, from its geological position (below the Vemáveram shales), the Budaváda group,§ is probably also to be classed here although containing plants and marine animals.

Certain red shales on the Northern face of the Latiahar hill, in the Aurunga coalfield, and containing Lower Gondawána fossils (*Glossopteris*, *Vertebraria* &c.,) should most probably be included here also.

a. PANCHET DIVISION.

Panchet group.—1861, Blanford (W. T.) Report on the Raniganj coalfield Mem. G. S. I. Vol. III, p. 126.

The uppermost group of the Lower Gondwánas is typically developed in the Raniganj coalfield, from whence it was first described. It is here fossiliferous, containing *Labyrinthodontia* and *Dicynodontia* and plants. It has its name from the Panchet hill, Bengal

This group is also developed in several other basins but is scarcely fossiliferous; and the Almod beds (H. B. Medlicott) in the Sátpura basin are representatives of this group.

b. DAMUDA DIVISION.

Raniganj group.—1861, W. T. Blanford, M. G. S. I. Vol. III.

Top-group of the Damuda series, highly fossiliferous and coal-bearing.

At first described from the Raniganj coalfield, where it is typically developed.

It was afterwards recognised in all the Damuda valley coal-basins, but also beyond this region it is developed; in the Aurunga coalfield, Ramkola and Tatapáni coalfields and quite typically also in the South Rewah basin.

---

* H. B. Medlicott, Mem. G. S. I. Vol. X, p. 155.

† V. Ball, ib Vol. XIII, Pt. 2, p. 44, etc.

‡ 1877 King, Rec. G. S I. Vol. X, Pt. 2, p. 56, et seq.

§ Foote, Mem. G. S. I. Vol. XVI, Pt. 1, pp. 69-71.

It is represented by some other groups in other coalfields, *viz.*, the Kamthi group* of the Nágpur area and of the Raigarh-Hingir coalfields,† and the Bijori horizon of the Sátpura basin,‡; both are fossiliferous.

The Mángli shales of the Cent. Provinces, (South of Nágpur) are also placed here although I was (and I must say, I am still so) very much inclined to believe them to be more closely related to the Panchet group.

Ironstone shales.—1861, W. T. Blanford. On the Geology etc., of the Raniganj coalfield, Mem. G. S. I. Vol. III, p. 28.

This group, from a stratigraphical point of view belongs to the Raniganj group, though on account of the occurrence of ironstone it is easily separable. It is present in most of the Bengal coal-fields and both the ironstones as well as the carbonaceous shales in which they are imbedded, or with which they alternate, are fossiliferous, the fossils being very much the same as in the other groups of the Damuda division.

The Motúr horizon§ of the Sàtpura basin is most probably the representative of the ironstone shales.

Barákar group.—1861 Oldham (T.) Additional remarks on the geology, relations etc., of the rocks in Bengal etc., M. G. S. I. Vol. III, p. 42.

For the lowest group of the Damuda division (series), which was at first simply called "lower Damudas," the above name was proposed by Dr. Oldham (1861), since the corresponding term "upper Damudas," had also to be replaced by another name (the present Jabalpur group) as it was employed for a group of the upper Gondwána portion.

The Barákar group, like the Raniganj group, is rich in coal, and is present in most of the coalfields; it contains also numerous fossils, which, however, on the whole do not differ much from those of the two higher groups.

c. TALCHIR DIVISION.

Karharbari beds (coalbearing.)—1877, Feistmantel, Rec. G. S. I. Vol. X, Pt. 3, p. 137-139.

1878, W. T. Blanford, Rec. G S. I, Vol. XI, Pt. 1.

The coalbeds of the Karharbári coalfield were formerly included in the Barákar group; but the examination of the Flora has shewn their closer connexion with the Talchirs. They are with certainty known from the above coalfield and from the Mopáni coalfield, Sátpura basin.

---

* 1870, W. T. Blanford, Rec. G. S. I. Vol. IV, p 50; Mem. G. S. Ind. Vol. IX, p. 11, et seq.

† V Ball, Rec. G. S. India, Vol. VIII, p. 113, etc.

‡ H. B. Medlicott, Mem. G. S. I. Vol. X, p. 27.

§ H. B. Medlicott, Mem. G. S. I. Vol. X, p. 29, (161.)

In these beds *Vertebraria* appears for the first time, *Glossopteris* is largely enough developed, *Gangamopteris* predominates.

Talchir group.—1859. Talchir coalfield, M. G. S. I. Vol. I.

This peculiar group which is at the base of the whole Gondwána system is met with in all the various basins. It consists of shales (bluish grey or olive green, fine earthy), sandstones and a boulder bed, which is believed to have been formed by floating ice. The shales are fossiliferous; fossils are known hitherto from three basins, in two of which I have collected and found the fossils to be numerous.

Here *Glossopteris* takes its origin in India; among other fossils the genus *Gangamopteris* is the most numerous. There is also a fragment of an insect wing, but too fragmentary to allow of an identification or classification.

I shall now proceed to enumerate the Gondwána fossils hitherto known, from the entire system, in systematic (biological) order giving with each genus and species its distribution. I begin with the lowest plants passing then to the animals. Of references to the species I shall give only such where there is a figure of the species or the latest description. I have also added, for sake of convenience, the etymological derivation of all the names.

PLANTAE.

Class: ALGAE.*

Genus *Chondrites*,† Stbg.

There is only one Alge mentioned from the Gondwána system, and even its occurrence is very doubtful.

Chondrites (?), dichotomus, Morr. sp.

1840. *Fucoides*, Morris, Transact. Geol. Soc. Lond. Vol. V, 2 Ser. Tab. XXI, fig. 1.

1876. *Chondrites*, Feistmantel, Kach Flora, Gondwána Flora. Vol. II, p. 6.

Group and locality uncertain, as is the species itself.

Class: EQUISETACEÆ.‡

This order is well represented, though almost entirely in the Lower Gondwánas.

---

* The seaweed family.

† From Chondrus, name of a living genus of seaweeds.

‡ Horse-tail family.

Genus *Equisetum*, Lin.

The stem articulated, the internodes striated, the leaves connected to a sheath, placed round the joints.

Only one species from the Upper Gondwánas.

Equisetum rajmahalense,* Oldh. and Morr. sp. (Schimp.)

1862. *Equisetites*, Oldham and Morris, Rájmahál Flora (Gondwána Flora, Vol. I,) Pl. II, figs. 2-5, Pl. XXXV, figs. 3, 4.
1877. Feistmantel, Rájmahál Flora, Gondwána Flora, Vol. I, p. 63.

Resembles *Equisetum münsteri*, Schimp.

Rájmahál group: Belátikur near Burio, Rájmahál hills.

Genus *Schizoneura*,† Schimp. et Moug. 1844.

This genus occurs in Europe in Triassic and rhaetic beds only.

Schizoneura gondwanensis,‡ Fstm.

1876. Feistmantel, Rec. G. S. I. Vol. IX, p. 69.
1880. Pal. indica, Gondwána Flora, Vol. III, p. 61, Pls. I A.—IX. A.

The stem articulated, striated and branched; the leaflets about 12-22, long and with a middle vein, are joined into a sheath which splits into two or more portions, placed round the joint.

Differs from the European form by the greater number and the somewhat coarser consistence of the leaflets.

Range:—

Upper Gondwánas: Certain red shales of apparently Lower Mahádeva (lower Upper Gondwánas) age, on north face of Latiahar hill, (close to the top) Aurunga coalfield.

Lower Gondwánas: Panchet group: near Maitúr, north-west of Assensole, Raniganj coalfield.

Raniganj group: Raniganj and Jharia coalfields; Hurdeeamo, N. W. of Sarum, Bokaro coalfield; Ramkola coalfield; Garjan hills, Raigarh coalfield; South Rewah basin (several places); Baricondam, Sátpura basin.

Barákar group: Lumki hill, Karharbári coalfield.

Karharbári beds: ? Karharbári coalfield; Mohpáni coalfield (Sátpura basin).

---

* Rájmahál hills.

† Schizo (gr) = to slit; neura (gr) = the vein.

‡ Called so from the Gondwána system.

Schizoneura comp. *meriani*,[*] Schimp.

1879. Feistmantel, Pal. ind., Talchir-Karharbári flora, Pl. I, figs. 6-7.
1880. Damuda-Panchet flora, ibid. p. 64, Pl. VIII A. 4; IX A. 3-6.

Some specimens from the Karharbári and Raniganj coalfield appear to belong to this species.

Some other equisetaceous stalks from the Talchir shales appear also to belong to *Schizoneura*, so that in India this genus ranges from the Talchir to the Panchet groups.

Genus *Phyllotheca*,[†] Bgt.

A genus at first described from the upper coalmeasures in Australia (*Ph. australis*, McCoy) then from the Italian Oolite (by Zigno), then from India and lately from the Siberian Jura.

Phyllotheca indica,[‡] Bunb.

1862. Bunbury, Nágpur plants, Qu. J. G. S. Vol. XVII, p. 355, Pls. X, XI.
1880. Feistmantel, Pal. ind., Gondwána Flora, Vol. III, p. 67, Pl. XII A fig. 3-9.

Lower Gondwánas: Raniganj (Kámthi) group: Raniganj coalfield and Nágpur area.

Phyllotheca robusta,[§] Feistm.

1880. Pal. ind., Gondwána Flora, Vol. III, pp. 68-69, Pl. XIV A, figs. 1-2.

Lower Gondwánas: Raniganj group (?) near Dubrajpur, Gopicándar area, Rájmahál hills.

Another *Phyllotheca* was recently brought by myself from the Talchir shales, Káranpúra coalfield, but it is not yet figured.

Genus *Trizygia*,[||] Royle.

Like *Sphenophyllum* of the palaeozoic period, but the leaves in *three* pairs on one side of the articulation, always *six* leaves only.

Trizygia speciosa,[¶] Royle.

1839. Royle, Botany etc., Himalayan Mts. p. 431, Pl. II, fig. 8.
1876. Feistmantel, J. A. S. Beng., Vol. XLV, p. 342, Pl. XV, fig. 1-2.

a. Lower Gondwánas: Barákar group in the Bokáro coalfield (near Layo); Aurunga coalfield (near Murup) and in the Talchir coalfield (near Gopálprasád).

---

[*] Proper name.

[†] Phyllon (gr) = a leaf; theca (gr) = a sheath.

[‡] Indicus (lat) = indian.

[§] Robustus (lat) = strong.

[||] Threis (gr) = three; Zeugos (gr) = a pair.

[¶] Speciosus (lat) = handsome.

b. Raniganj group: Raniganj coalfield; Sátpura basin; Sikkim (according to Sir J. D. Hooker).

Genus *Vertebraria*,[*] Royle.

A very peculiar genus, hitherto with certainty known only from India and Australia.

Vertebraria indica, Royle.

1839. Royle, *l. c.*, p. XXIX, Pl. II, fig. 1-7.
1880. Feistmantel, Pal. ind. Gondwána Flora, Vol. III.

This fossil is very abundant and has a very wide distribution.

Upper Gondwánas: In the red shales, mentioned above, from the Latiahar hill, Auranga coalfield.

Lower Gondwánas: Raniganj (*Kámthi*) *group* in most of the coalfields.

Barákar group: in most of the coalfields.

Karharbári beds: Karharbári coalfield, rare.

Class FILICES.

Ferns are very numerous both in the upper and lower portion of the Gondwána system.

Order GLEICHENIACEÆ.

Several forms, described at first with other generic names, appear to belong here.

Gleichenia[†] *bindrabunensis*,[‡] Schimp.

1862 *Pecopt. gleichenioides*, Old. and Morr. Rájmahál flora, Pal. ind., Gondwána Flora, Vol. I, pp. 45, 46, Pls. XXV, XXVI, fig 1, 3.
1869. Schimper, Trait. d. Pal. vég. I, p. 670.

Upper Gondwánas: Rájmahál group in the Rájmahál hills.

Pecopteris[§] *tenera*,[||] Feistm.

1876. Feistmantel, Kach Flora, Pal. ind., Gondwána Flora, Vol. II, p. 26, Pl. III, fig. 5.

Upper Gondwánas: Umia group, Dudye in Kach.

Order MARATTIACEÆ.

Genus *Danaeopsis*,[¶] Heer.

Danaeopsis rajmahalensis,[**] Feistm.

1877. Feistmantel, Pal. ind., Gondwána Flora, Vol. I, p. 105, Pl. XXXVIII, fig. 4

---

[*] Vertebra (lat) = a joint of the back-bone.
[†] A living genus.
[‡] From Bindrabun.
[§] Peko (gr) = to comb; pteris (gr) = fern.
[||] Tener (lat) = tender.
[¶] Like Danaea.
[**] Rájmahál hills.

Upper Gondwánas : Rájmahál group in the Rájmahál hills.

Another *Danaeopsis* will be described by myself on the next opportunity from the S. Rewah basin.

Order CYATHEACEÆ

Genus *Cyathea,*[*] Lin.

Cyathea comp. *Tchihatcheffi*[†], Schmalh.

1880. Feistmantel, Pal. ind., Gondwána Flora, Vol. III, p. 75, Pl. XVI, A. figs. 1, 2, 4.

Lower Gondwánas : Barákar group, near Talchir, Talchir coalfield.

This species is otherwise known from the Jura of the Altai Mountains.

Sphenopteris[‡] *polymorpha,*[§] Fstm.

1876. Journ. As. Soc. Beng., Vol. XLV, pp. 356-358, Pl. XVI, figs. 5-7, XVII.

1880. Pal. ind., Gondw. Flora, Vol. III, p. 76, Pls. XV A, XVI A, fig. 3, XVI A *bis,* figs. 1-6.

Lower Gondwánas ; a. Barákar group : Lumki hill, Karharbári coalfield.

b. Raniganj group : Raniganj coalfield.

Genus *Dicksonia,*[||] L'Hérit.

In this genus have, I think, to be placed besides others, also several forms which were formerly classed with other genera.

Dicksonia hughesi,[¶] Fstm.

1880. Pal. indica, Gondwána Flora, Vol. III, p. 52.

Lower Gondwánas : Raniganj group of the Jharia coalfield, and of the Sátpura basin (Bijori horizon).

Dicksonia bindrabunensis,[**] Feistm.

1877. Feistmantel, Rájmahál Flora, Gondwána Flora, Vol. I, p. 76, Pl. XXXVII fig. 2.

Upper Gondwánas : Rájmahál group, at Bindrabun, Rájmahál hills.

Other ferns, from the upper Gondwána portion, to be placed with this genus, are : *Dicksonia*[††] sp. (Jabalpur group), *Sphenopteris,* comp. *arguta,*[‡‡]

---

[*] A living genus.

[†] Proper name.

[‡] Shen (gr) = wedge ; pteris (gr) = fern.

[§] Polys (gr) = many-fold ; morphe (gr) = form, aspect.

[||] A living genus ; from a proper name.

[¶] Proper name (Mr. Th. Hughes).

[**] Name of a locality

[††] 1877. Pal. ind. Gondwána Flora, Vol. II, p. 86.

[‡‡] 1877. Pal. ind. Gondwána Flora, Vol. I, pp. 71-72.

Lindl. and Hutt., (Katrol group, Jabalpúr group and Rájmahál group), and *Hymenophyllites bunburyanus*,* Oldh. and Morr. sp. (Rájmahál group). Of more importance is the following.

Pecopteris lobata, Oldh. and Morr.

1877. Pal. Gondwána Flora Vol. I, p. 92.
1881. Rec. Geol. Survey India, Vols. XIV, p. 149, figures.

This species I have quite recently united with *Dicksonia* also.

Upper Gondwánas : Rájmahál group in the Rájmahál hills.

Order Polypodiaceae.

Type *Asplenium*, Lin.

Asplenium whitbyense, Heer.

1876-79. Pal. ind. Gondwána Flora, Vols. I and II.
1880. Pal. ind. Gondw. Flora, Vol. III, p. 52.

This species was at first described as an *Alethopteris*, but the discovery of specimens with fructification, caused it to be placed with *Asplenium*.

Upper Gondwánas : Umia group, Katrol group (Kach.) ; *Jabalpur group* (Sátpura and S. Rewah basin) ; *Sripermatur* (*Vemáveram*) group.

Lower Gondwánas : Raniganj group, Raniganj coalfield ; Jharia coalfield ; S. Rewah basin. To this very probably also belongs :

Alethopteris† *indica*, Oldh. and Morris.

1862-79. Pal. ind. Gondwána Flora Vol. I.

Upper Gondwánas : Jabalpur group (S. Rewah basin) ; *Sripermatur group* (Sripermatur area ; S. Kistna area ; Utatúr plant beds) ; *Rájmahál group*.

Alethopteris medlicottiana,‡ Feistm.

1877. Pal. ind. Gondwána Flora, Vol. IX, p. 87.

This form has probably also to be classed with this group.

Upper Gondwánas : Jabalpur group (Sátpura aud S. Rewah basin).

Type *Polypodium*, Linn.

Alethopteris lindleyana,§ Royle.

1869. Royle, *l. c.*, Tab. II, fig. 4.

Although the appearance of the fronds would place this form in proximity with *Aspl. whitbyense* and *Aspl. indicum*, yet, fructificating specimens, which I believe belong to this species force us to class it with *Polypodium*, keeping it still with the *Polypodiaceae*.

---

* 1877. Pal. ind. ib. p. 88.

† Alethes (gr) = true, and pteris = true fern.

‡ Proper name.

§ Proper name.

Lower Gondwánas : Raniganj group, Raniganj coalfield.

Type *Phegopteris*, Mett.

With the *Polypodiaceae* has also to be placed *Alethopteris phegopteroides*,[*] Feistm.

1876. Journ. As. Soc. Beng., Vol. XLV, p. 362, Pl. XVIII.

A very large and interesting fern, of rare occurrence.

Lower Gondwánas : Raniganj group, Raniganj coalfield.

The ferns, hitherto named, are such, as can with some certainty (mostly from the state of the fructification) be correlated with living ferns. There is, however, a by far greater portion of ferns which have to be classed under separate orders whose relation to living forms can only be guessed, while in some other cases it is entirely doubtful.

Order SPHENOPTERIDEAE.

Sphenopteris hislopi,[†] Oldh. and Morr.

1862. Rájmahál Flora, Pal. ind., Gondwána Flora, Vol. I, Pl. XXXI, figs. 1-5.

Upper Gondwána : Rájmahál group, near Bindrabun, Rájmahál hills.

Sphenopteris ? membranosa,[‡] Feistm.

1877. Rájmahál Flora, Pal. ind., Gondwána Flora, Vol. I, p. 81, Pl. XXXII, fig. 4.

Upper Gondwánas : Rájmahál group, near Burio, Rájmahál hills.

Order NEUROPTERIDEAE[§] and CARDIOPTERIDEAE.[||]

Genus *Cyclopteris*,[¶] Bgt.

Cyclopteris oldhami,[**] Feistm.

1877. Rájmahál Flora, Pal. ind. Gondwána Flora, Vol. I, p. 88, Pl. XXXVI, figs. 1, 2, XXXVII, 5, 6.

Upper Gondwánas : Rájmahál group, near Bindrabun, Rájmahál hills.

---

[*] Like Phegopteris, a living genus of ferns.

[†] Proper name.

[‡] Thin membranaceous.

[§] From Neuropteris (neuron = the vein, and pteris = the fern) = the vein fern.

[||] Kardia (gr) = the heart and pteris ; the heart fern.

[¶] Kyklos (gr) = circle and pteris.

[**] Proper name.

Neuropteris valida,[*] Feistm.

1879. Talchir—Karharbári Flora, Pal. ind., Gondwána Flora, Vol. III, (Ser. XII, 1) pp. 10-11, Pls. II-VI.

A large and exceedingly nice, single pinnate fern, very numerous at one locality.

Lower Gondwánas: Karharbári beds at Buriadi (very frequent), at Passerabhia and Domahni (rare) in the Karharbári coalfield.

Cyclopteris (?) pachyrhachis,[†] Gopp.

1841. Göppert, Genera plant foss. Nos. 5-6, p. 94, Pl. 4, 5.

Lower Gondwánas: Panchet group, N. W. of Assensole, Raniganj coalfield.

Order ALETHOPTERIDEAE and PECOPTERIDEAE.

(Incertae sedis).

Alethopteris lobifolia,[‡] Lindl. and Hutt.

1877. Feistmantel, Jabalpur Flora, Pal. ind., Gondwána Flora, Vol. II, p. 86, Pl. III, fig. 1.

A species of the English Oolite.

Upper Gondwánas: Jabalpur group, from the Sher river, Sátpura basin.

Pecopteris concinna,[§] Presl.

1838. Presl. in Sternberg, V. d. Fl. d. Vorw. II, p. 149, Pl. 41, fig. 3.

Lower Gondwánas: Panchet group, N. W. of Assensole, Raniganj coalfield.

Genus *Merianopteris,*[‖] Heer.

Established by Prof. Heer in his "Fossil Flora der Schweiz,"[¶] upon the former *Pecopteris angusta* from the Trias.

From India I have identified one species of somewhat larger dimensions as:

Merianopteris major,[**] Feistm.

1880. Damuda Flora, Pal. ind., Gondwána Flora, Vol. III, p. 52.

Lower Gondwánas: Raniganj group, in the Raniganj coalfield.

---

[*] Validus (lat) = strong, big.

[†] Pachys (gr) = thick; rhachis (gr) = stalk.

[‡] With lobed leaves.

[§] Concinnus (lat.) = pretty, neat.

[‖] Merian's fern.

[¶] Pflanzen der Trias, pp. 69, 87-88; Pls. XXIV, 7-12; XXXVII, XXXVIII, 7, 8.

[**] Larger, in comparison with the original species.

Asplenites[*] *(Lepidopteris) macrocarpus*,[†] Oldh. and Morr.

1862. Oldham and Morris, Rájmahál Flora, Pal. ind., in Gondwána Flora, Vol. I, p. 51, Pl. XXVIII, 2, 3, XXXVI, 5-7.

1877. Feistmantel, Rájmahál Flora, Gondwána Flora, Vol. I, p. 171, Pl. XXXVII, figs. 3, *a*, *b*, *c*, 4, 4*a*; XLVIII, figs. 2.

Resembles very much the Rhœtic *Lepidopteris ottonis*, Schenk sp.

Upper Gondwánas: Rájmahál group, near Bindrabun, in the Rájmahál hills; in the Atgarh sandstone, near Katák; and near Golapili, on the Southern Godávari.

Pecopteris reversa,[‡] Feistm.

1879. Pal. ind. (II-4), Gondwána Flora, Vol. I, p. 205, Pl. I, fig. 5, II. 1, 2, 7.

Upper Gondwánas: Sripermatur group, near Ragavapuram, on the S. Godávari, and in the Sripermatur area.

Order LOMATOPTERIDEÆ and PACHYPTERIDEÆ.

Genus *Thinnfeldia*, Braun.

Thinnfeldia[§] comp. *odontopteroides*,[‖] Feistm. (Morr. sp.)

1845. Morris in Strzelecki, N. S. Wales, etc.

1879. Feistmantel, Flora des östl. Australiens, *Palæontographica*, Suppl. III, Lief. III, pp. 105, 165.

This is a species, occurring in Australia in beds, above the upper coal-measures, *viz.*, Hawkesbury-Wianamatta, and in the upper mesozoic beds of Queensland and Tasmania.

Lower Gondwánas: Panchet group in the Ramkola Tatapáni coal-fields.

Upper Gondwánas; Parsora near Beli, South Rewah basin (lowest upper Gondwána beds).

Thinnfeldia indica,[¶] Feistm.

1877. Feistmantel, Rájmahál Flora, Pal. ind., Gondwána Flora, Vol. I, p. 87 Pl. XXXIX, 1. 1*a*; a true *Thinnfeldia*.

Upper Gondwánas: Rájmahál group Busko Ghat and Burio, Rájmahál hills.

---

[*] Like *Asplenium*, in fossil state.

[†] Makros (gr) = large; karpos (gr) = fruit.

[‡] Reversed.

[§] Proper name.

[‖] Like *Odontopteris*.

[¶] Indian.

*Thinnfeldia subtrigona,** Feistm.

1879. Pal. ind., Gondwána Flora, Vol. I, p. 203, Pl. I, fig. 7.

Upper Gondwánas: Sripermatur group near Vemáveram, S. Kistna country.

There are several other fragmentary specimens, which I have also referred to *Thinnfeldia,* but which need not be repeated here.

Genus *Dichopteris,*† Bgt.

Dichopteris ellorensis, Feistm.

1879. Pal. ind., Gondwána Flora, Vol. I, p. 204, Pl. II. figs. 8-10.

Upper Gondwánas: Sripermatur group, at Ragavapuram, Ellore District, S. Godávari.

Genus *Pachypteris,*‡ Bgt.

Pachypteris specifica,§ Feistm.

1876. Feistmantel, Kach Flora, Pal. ind., Gondwána Flora, Vol. II, p. 32, Pl. III, fig. 6.

Upper Gondwánas: Umia group, near Bhujuri in Kach.

Another species was described by me from Kach, which is somewhat doubtful.

Order TAENIOPTERIDEÆ.

Genus *Taeniopteris,*‖ Bgt.

Taeniopteris densinervis,¶ Feistm.

1876. Feistmantel, Kach Flora, Pal. ind., Gondwána Flora, Vol. II, p. 19, Pl. II, fig. 6.

I could not assign this fragmentary specimen to any of the subgenera of *Taeniopteris.*

Upper Gondwánas: Umia group, near Kukurbit, in Kach.

Sub-genus *Macrotaeniopteris,*** Schimp.

This comprises all the large and broad-leaved forms, in Europe it belongs principally to the mesozoic epoch. In India it occurs both in the Lower and Upper Gondwánas.

---

* Somewhat trigonal.

† Dicha = in two; pteris = fern; the forked fern.

‡ Pachys (gr) = thick, coarse; pteris = fern.

§ Typical.

‖ The ribbon fern.

¶ Densus = close; nervus = the vein.

** Makros (gr) = large and *taeniopteris.*

Macrotaeniopteris crassinervis,[*] Feistm.

1877. Feistmantel, Rájmahál Flora, Pal. ind., Gondwána Flora, Vol. I, p. 102, Pl. XXXVIII, figs. 1-3.

Upper Gondwánas : Rájmahál group, near Murero and Busko-ghát, Rájmahál hills.

Macrotaeniopteris lata,[†] Oldh. and Morr.

1862. Rájmahál Flora ; Pal. ind., Gondwána Flora, Vol. I, p. 41, Pls. I, II, fig. 1 ; III. fig. 2, Pl. V.

1877. Feistmantel, ibidem, p. 99, Pl. XLIII, fig. 1.

Upper Gondwánas : Rájmahál group, near Bindrabun in the Rájmahál hills. Numerous.

Macrotaeniopteris morrisi,[‡] Oldh.

1862. Oldham *l. c.*, p. 13, Pl. III, fig. 1.

Upper Gondwánas : Rájmahál group, near Bindrabun, Rájmahál hills.

Macrotaeniopteris ovata,[§] Schimper.

1862. Oldham *l. c.*, p. 43, Pl. III, figs. 3-5.

1877. Feistmantel, *l c.*, p. 103, Pl. XXXVII, fig. 1.

Upper Gondwánas : Rájmahál group, near Bindrabun, Rájmahál hills.

Macrotaeniopteris danaeoides,[||] Royle sp.

1839. Royle, Botany etc., Himalayan Mts. Pl. II.

1876. Feistmantel, J. A. Soc. Bengal, Vol. XLV, p. 365, Pl. XIX, figs. 1, 2, Pl. XX, fig. 1.

Lower Gondwánas : a Barákar group, near Burgo in the Rájmahál hills.

b. Raniganj (Kámthi) group of the Raniganj and Jharia coalfield, Bengal ; near Kámthi, Nágpur area.

Macrotaeniopteris feddeni,[¶] Feistm.

1876. Feistmantel, R. G. S. I. Vol. IX, Pt. 4, p. 137.

Lower Gondwánas : Kámthi (Raniganj) group, near Kámthi, Nágpur area.

There is another fragment of a *Macrotaeniopteris* from the Jabalpur group, but I do not find it practicable, to distinguish it by a separate name.

---

[*] Crassus = thick, nervus = vein.

[†] Latus = broad.

[‡] Proper name.

[§] Oval.

[||] Like *Danaea*, a living genus of ferns.

[¶] Proper name (Mr. F. Fedden, of the Geolog. Survey of India.)

Sub-genus *Oleandridium*,[*] Schimp.

Oleandridium vittatum,[†] Bgt. sp. (Schimp).

1828. *Taeniopteris*, Brongniart hist. d. végét. p. 263, Tab. 82, figs. 1-3.

1876. *Oleandridium*, Feistmantel, Kach Flora, Pal. ind., Gondwána Flora, Vol. II, p. 15, Pl. I, figs. 1-3, II, 1-5, XII. 1.

Upper Gondwánas : Umia group, near Kukurbit in Kach.

Oleandridium comp. *stenoneuron*,[‡] Schenk.

1867. Schenk, Flora der Grenzschichten p. 103, tab. XXV, figs. 5, 6.

Lower Gondwánas : Panchet group, in the Raniganj coalfield.

Sub-genus *Angiopteridium*,[§] Schimp.

Angiopteridium spathulatum,[‖] Schimp. (McClell. sp.).

1862. *Stangerites*, Oldham and Morris, Rájmahál Flora, Pal. ind., Gondwána Flora. Vol I, Pl. VI, figs. 1-7.

1877. Feistmantel, Rájmahál Flora, ib. Vol. I, p. 97.

This is a very common species in the *Upper Gondwánas : a. Rájmahál group*, in the Rájmahál hills and near Golapili, South Godávari district *b. Sripermatúr group* in the S. Godávari district, S. Kistna and Trichinopoli district, as also in the middle Godávari basin.

Angiopteridium mc'Clellandi,[¶] Schimp. (Oldh. and Morr. sp.)

1862. *Stangerites*, Oldham and Morris, *l. c.*, p. 33, Pl. XXIII.

1877. Feistmantel, *l. c.*, Pl. XLVI, figs. 5, 6.

This is a species with a pinnate frond.

Upper Gondwánas : a Rájmahál group in the Rájmahál hills ; *b. Sripermatúr group* in the S. Godávari and S. Kistna district, and in the Sripermatúr area.

Lower Gondwánas : There are some fragmentary specimens from the "Lower Gondwánas" in the Nágpur area and in the South Rewah basin, which, although not exhibiting the pinnate nature of the frond yet exhibit all the other characters of the species to such a degree, that I cannot distinguish them.

Angiopteridium ensis,[**] Oldh. sp.

1862. *Stangerites*, Oldham and Morris, *l. c.*, p. 35, Pl. VI, figs. 8-10.

1877. Feistmantel, ibid. p. 97.

---

[*] Like *Oleandra*, a living genus.

[†] Vittatus, from vitta = a headband.

[‡] Stenos = close ; neuron = the vein.

[‖] Like *Angiopteris*, a living genus.

[§] Spathulate.

[¶] Proper name.

[**] Ensis (lat) = sword—referring to the form of the leaf.

Upper Gondwánas: Rájmahál group, near Burio, Rájmahál hills.

Angiopteridium comp*ensis*, Oldh. sp.

1877. Feistmantel, Golapili Flora *l. c.*, p. 173, Pl. I, figs. 6*a*, 7*a*.

Upper Gondwánas: Rájmahál group, near Golapili, S. Godávari district.

Angiopteridium infarctum, Feistm.

1880. Feistmantel, Pal. ind., Gondwána Flora, Vol. III, p. 53.

Lower Gondwánas; Barákar group, near Kumerdhubi, Raniganj coalfield.

Type *Vittaria*, Swartz.

Genus *Paloeovittaria*,* Feistm.

Palaeovittaria Kurzi,† Feistm.

1876. Feistmantel, Raniganj plants, J. As. S. B., Vol. XLV, p. 368, Pl. XIX. fig. 3-4.

Lower Gondwánas: Raniganj group, Raniganj coalfield.

Order DICTYOTAENIOPTERIDEÆ.‡

This order might with equal propriety be termed *Glossopterides*, the only genus it at present comprises being the famous *Glossopteris*,§ Bgt.

Genus *Glossopteris*, Bgt.

1828. Brongniart, Histoire, végétaux fossiles, p. 223.

This genus is formed of leaves of generally a more or less oblong or spatulate shape of various sizes, with a *distinct midrib*, and the secondary veins forming a net-venation of a varied character.

It was at first described by Brongniart from Australia (from the upper coalmeasures) and from India, from beds, which are now known as the Raniganj group (see *ante*). Subsequently it was also identified from the lower coalmeasures (carboniferous) in N. S. Wales; it was found in India both in the *Lower* (in all groups) and *Upper* Gondwána system, so that it ranges in these two countries from Carboniferous to Jura.

In India it is very well represented, its greatest development being in the Lower Gondwána system, and in it in the *upper groups*. About 17 or 18 species are described in my Damuda Flora (Pal. ind., Gondwána Flora, Vol. III). For an easier arrangement I have grouped them into five *sections*, according to the net-venation and the shape of the leaf.

Of these species I shall mention here only those originally described by Brongniart and those which have a wide range in India.

---

* Palaios (gr) = old, ancient; and Vittaria = a living genus of ferns.

† Proper name = the late Curator, Botanical Gardens, Calcutta.

‡ *Taeniopterides* with a net-venation.

§ Glossa (gr) = tongue; pteris = fern.

Glossopteris indica,[*] Schimp.

1828. Glossopt. browniana, var. indica, Brongniart Hist. vég. foss. p. 223, tab. 62, fig. 2, β

Lower Gondwánas: Barákar group, Raniganj group and *Panchet group.*

Upper Gondwánas: From the red shales, north face of Latiahar hill, Aurunga coalfield.

Glossopteris communis,[†] Feistm.

1876. Feistmantel, J. As. Soc. B., Vol. XLV, p. 375, Pl. XX, fig. 5.

Lower Gondwánas: Karharbári beds; Barákar group; Ironstone shales; Raniganj group; Panchet group.

Upper Gondwánas: The red shales, north face, Latiahar hill, Aurunga coalfield; *Jabalpúr group,* Sher river, Sátpura basin.

Glossopteris damudica,[‡] Feistm.

1880. Pal ind. Gondwána Flora, Vol. III, p. 53.

Lower Gondwánas: Karharbári beds; Barákar group; Ironstone shales; Raniganj group.

Upper Gondwánas: Red shales, north face Latiahar hill, Aurunga coalfield.

Glossopteris browniana,[§] Bgt.

1828. Brongniart, *l. c.*, p. 223, Pl. 62, fig. 1.

Lower Gondwánas: Barákar group; Raniganj group.

Glossopteris angustifolia,[||] Bgt.

1828. Brongniart, *l. c.*, p 227, Pl. 63, fig. 1.
1876. Feistmantel, J. As. Soc. B., *l. c.*, Pl. XXI, fig. 2-4.

Lower Gondwánas: Barákar group; Raniganj group; Panchet group.

The names of the others may just be mentioned:—

Gloss. intermittens, Feistm. (Barákar group); *Gl. stricta,* Bunb. (Kámthi-Raniganj group); *Glossopteris (?) musaefolia,* Bunb. (ditto); *Gl. retifera,* Feistm. (Raniganj group); *Gl. conspicua,* Feistm. (ditto). *Glossopt. divergens,* Feistm. (ditto); *Gl. ingens,* Feistm. (Barákar group); *Gl. leptoneura,* Bunb. (Kámthi-Raniganj group); *Gl. formosa,* Feistm. (Raniganj group); *Gl. orbicularis,* Feistm. (ditto); *Gl. decipiens,* Feistm. (Karharbári beds).

I may also mention that *Glossopteris* is now also known with certainty from the Talchir shales; I have brought several specimens from the Talchirs in the Chano vicinity, North Káranpúra coalfield.

---

[*] Indian.

[†] Common.

[‡] Appertaining to the Damuda series.

[§] Proper name.

[||] Narrow-leaved.

Order DICTYOPTERIDEÆ.

The most prominent group of fossils in this order belong to a genus equally well represented in India and in Australia (Victoria) in beds of about the same horizon.

Genus *Gangamopteris*,* McCoy.

1875. McCoy Prodr. Pal. Victoria, Dec. II, p. 11.

Like *Glossopteris*, this genus is composed of leaves with a net-venation but *without* a midrib, all the veins radiating from the base into the leaf.

It is of frequent occurrence in the Lower Gondwánas in India but in a reversed proportion to *Glossopteris*, being most frequent in the lowest groups (Talchir-Karharbári) of that portion.

We know the following species :

Gangamopteris cyclopteroides,† Feistm.

1879. Feistmantel, Pal. ind., Gondwána Flora, Vol. III, Pt. 1, p. 12, Pls. VII, IX, XI, etc.

A very abundant species.

Lower Gondwánas : Talchir shales of the Karaun (Deoghur) and Káranpúra coalfields; *Karharbári beds* of the Karharbári and Mohpáni coalfield.

Of this species I have also described many varieties, occurring in one or the other of the above groups or both ; but it is not necessary to repeat them here.

Gangamopteris buriadica,‡ Feistm.

1879. Feistmantel, *l. c.*, p. 15, Pl. XVIII, fig. 1-2.

Lower Gondwánas : Karharbári beds, Karharbári coalfield.

Gangamopteris major,§ Feistm.

1879. Feistmantel, *l. c.*, p. 15, Pl. XIV, 3, Pl. XVI, fig. 1-2.

Lower Gondwánas : Karharbári beds, Karharbári coalfield.

Gangamopteris angustifolia,‖ McCoy.

1879. Feistmantel, *l. c.*, p, 16, Pl. IX, fig. 5.

Lower Gondwánas : a. Talchir shales, in the Deoghur and Káranpúra coalfields ; *b. Karharbári beds*, in the Karharbári coalfield.

This species also occurs in Australia in the upper coalmeasures (N. Castle-beds) and in the Bacchus-Marsh sandstone, Victoria.

---

* Gangamon (gr) = a small net ; pteris = a fern.

† Like *Cyclopteris.*

‡ From the locality Buriadi, Karharbári coalfield.

§ Larger.

‖ Narrow-leaved

Among the specimens, lately brought by myself from the Karharbári and Káranpúra coalfields, there is also another species which occurs in the Bacchus-Marsh sandstone of Victoria.

Gangamopteris is also represented in the higher groups of the Lower Gondwánas.

Gangamopteris anthrophyoides,[*] Feistm.

1880. Feistmantel, Pal. ind. Gondwána Flora, Vol. III, p. 54.

Lower Gondwánas: Raniganj group, Raniganj field.

Gangamopteris hughesi,[†] Feistm.

1876. Feistmantel, Rec. Geol. Survey of Ind. Vol. IX, Pt. 4, p. 38.

Lower Gondwánas: Kámthi (Raniganj) group, Kámthi, Nágpur area

Gangamopteris whittiana,[‡] Feistm.

1876. Feistmantel, J. As. S. Beng., Vol. XLV, p. 371, Pl. XX, figs. 3-4.

Lower Gondwánas: Raniganj group, Raniganj coalfield.

Genus *Belemnopteris,*[§] Feistm.

1876. Feistmantel, J. As. Soc. Beng., Vol. XLV, p. 370.

Belemnopteris wood-masoniana,[||] Feistm.

1876. Feistmantel, *l. c.*, p. 371, Pl. XX, figs. 1-2.

This is one of the most interesting fossils, being very close to some living forms, amongst others to *Hemionitis cordata,* Roxburgh, which grows in India.

Lower Gondwánas: Raniganj group, Raniganj field.

INCERTÆ SEDIS.

The systematic positions of some other ferns are not quite certain. Amongst them are several forms with a net-venation and with a compound leaf, as exhibited either by the actual attachment of several leaflets to a common stalk or by the shape of the leaflets.

I have classed them provisionally with *Sagenopteris*, but in case a new generic name should hereafter be required for them, I propose the name *Dactylopteris* (the fingered fern).

They are mostly from the *Raniganj group.* One species was also described by myself from the *Karharbári beds.*

---

[*] Like Anthrophyum, a living genus.

[†] Proper name.

[‡] Proper name.

[§] Belemnon (gr) = arrow-head; pteris = fern.

[||] Proper name.

One leaflet is very similar to leaflets of *Sagenopteris rhoifolia*, Presl.

In this section (of uncertain ferns) also belongs that fern which I have already quoted elsewhere as *Actinopteris bengalensis*, and the shape of the leaves really resembles very much the form characteristic of this genus as described by Prof. Schenk from the Rhätic formation. Our fossil is from the *Raniganj group*.

RHIZOMES AND STALKS.

There are several indeterminable fossils which have to be considered as rhizomes and stalks of ferns. I shall refer to two only.

Genus *Rhizomopteris*,* Schimp.

Rhizomopteris balli,† Feistm.

1877. Rec. Geol. Survey, India, Vol. X, p. fig. 2-6.

This form is quite characteristic, exhibiting distinctly the circular scars and in some specimens also the dichotomy of the rhizome.

Upper Gondwánas ; Athgarh sandstone (Rájmahál group) near Athgarh, Orissa.

Fern stem or *rhizome*.

1861. Bunbury, Sir. Ch. : Nágpur plants, Q. J. G. S. Vol. XVII, Pl. XII.

Lower Gondwánas : Shales at Mángli C. Prov., Wardha valley coalfield.

One or two specimens of a circinate vernation of a fern were also found in the Rájmahál group of the Rájmahál hills.

Class LYCOPODIACEÆ.‡

Remains of Lycopods are very rare in the Gondwána system. I can only record one species.

Genus *Lycopodites*,§ Sternb.

Lycopodites gracilis,‖ Feistm.

1880. Preface to Vol. II, Gondwána Flora, p. 19.

1881. Records Geol. Survey of India, Vol. XIV, Pt. 1, pp. 150-151, Pl. II, fig. 2.

This fossil was previously classed with the *Coniferae*.

Upper Gondwánas : Rájmahál group, near Bindrabun, Rájmahál hills.

Class CYCADEACEÆ.¶

Remains of cycadeaceous plants are very numerous, especially in the upper portion of the Gondwána system, although they are also sufficiently

---

[*] Rhizome of a fern.

[†] V. Ball, Geolog. Survey, India.

[‡] The Club-moss family.

[§] Fossil Club moss.

[‖] Slender.

[¶] Cycad family.

represented in the lower portion, and this by such typical forms, that no doubt can any longer exist as to the occurrence of *Cycadeaceæ* in the Lower Gondwánas.

Order Zamieae.

Genus *Pterophyllum*, Bgt.

This genus is very abundantly represented in the lower groups of the Upper Gondwánas, and so is the subgenus which we shall quote hereafter as *Anomozamites;* both these forms have their representatives also in the Lower Gondwánas.

Pterophyllum carterianum,[*] Old.

1862. Oldham and Morris, Rájmahál Flora, Pal. ind., Gondwána Flora, Vol. I, p. 22, Pls. XV, fig. 4, XVIII, fig. 1.

Upper Gondwánas: Rájmahál group near Bindrabun Rájmahál hills, and Golapili, South Godávari district.

Pterophyllum crassum,[†] Morr.

1862. Oldham and Morris, *l. c.*, p. 24, Pl. XVI, 2.

Upper Gondwánas: Rájmahál group, near Bindrabun, Rájmahál hills.

Pterophyllum footeanum,[‡] Feistm.

1879. Feistmantal, Pal. ind. Gondwána Flora, Vol. I, p. 209, Pl. VI, figs. 1-6; VIII, XVI, 9.

Upper Gondwánas: Sripermatur group, at Vemávaram, South Kistna district, and in the Sripermatur area.

Pterophyllum kingianam,[§] Feistm.

1877. Feistmantal, ib. p. 177, Pl. III; 1, IV, 1.

Upper Gondwánas: Rájmahál group, near Golapili, South Godávari district.

Pterophyllum medlicottianum,[‖] Oldh.

1862. Oldham and Morris, *l. c.*, p. 21, Pl. XV, 3 XVII, 1.

1877. Feistmantel, *l. c.*, p. III, Pl. XLIII, fig. 2; XLIV, fig. 1.

Upper Gondwánas: Rájmahál group, near Bindrabun, Ghutiari and Murero in the Rájmahál hills.

Pterophyllum nerbuddaicum,[¶] Feistm.

1877. Gondwána Flora, Vol. II, p. 94, Pl. VI, fig. 9.

---

[*] Proper name.

[†] Thick.

[‡] Proper name (Br. Foote of the Geolog. Survey).

[§] Proper name (W. King of the Geological Survey of India).

[‖] Proper name (H. B. Medlicott, Superintendent, Geol. Survey of India).

[¶] Nerbudda river.

Upper Gondwánas : Jabalpur group, on the Sher river, in the Sátpura basin.

This has been hitherto the only representative of *Pterophyllum* found in the upper groups of the Upper Gondwánas.

*Pterophyllum propinquum,** Göpp.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. 110, with figure in text.

Upper Gondwánas : Rájmahál group near Bindrabun, Rájmahál hills.

Pterophyllum rajmahalense,† Morr.

1862. Oldham and Morris, *l. c.*, p. 12, Pl. XIII, 3—5 Pl. XIV, Pl. XVIII, fig. 2.

Upper Gondwánas : Rájmahál group, near Bindrabun and Onthea, Rájmahál hills.

Pterophyllum burdwanense,‡ Feistm. (McClell. sp.).

1850. *Zamia burdwanensis*, McClelland, Report, Geol Survey of India, p. 53, Pl. XIX, fig. 4.

1877. *Pterophyllum*, Feistmantel, Rec. Geol. Survey of India, Vol. X, Pt. 2, p. 71, Pl. I, 1.

The cycadeaceous nature of this fossil, by the discovery in the collections of the original specimen, has been established beyond any doubt.

Lower Gondwánas : Raniganj group, Raniganj coalfield.

Subgenus *Anomozamites,*§ Schimp.

This subgenus comprises forms of *Pterophyllum* with unequal (irregular) leaflets (whence the name). Many of the Upper Gondwána *Pterophylla* have to be classed here.

Anomozamites fissus,‖ Feistm.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. 61, Pl. XXXIX, figs. 2—4.

Upper Gondwánas : a. Rájmahál group near Burio, Rájmahál hills ; *b. Vemáveram group,* at Vemáveram, South Kistna district.

Anomozamites jungens,¶ Feistm.

1879. Feistmantel, Pal. ind., Gondwána Flora, Vol. I, p. 208, Pl. VII, figs. 11—13.

Upper Gondwánas : Vemáveram group, at Vemáveram.

---

* Close.

† Appertaining to the Rájmahál hills.

‡ From the locality Burdwan.

§ Anomoios (gr.) = unlike, dissimilar.

‖ Fissus (lat.) = slit.

¶ Jungo (lat.) = to connect, to join.

Anomozamites lindleyanus,[*] Schimp.

1879. Feistmantel, ib., p. 208, p. Pl. XVI, fig. 3.

Upper Gondwánas: Sripermatur (Vemáveram) group, in the Sripermatur area.

Anomozamites morrisianus,[†] Oldh. sp.

1862. *Pterophyllum*, Oldham and Morris, Rájmahál Flora, *l. c.*, p. 20, Pl. XV, 1, XVII, 2.

1877. Feistmantal, Rájmahál Flora, *l. c.*, p. 59, Pl. XLII, fig. 1.

Upper Gondwánas: Rájmahál group, near Bindrabun, Rájmahál hills and near Golapili, South Godávari district.

Anomozamites princeps,[‡] Oldh. and Morr. sp.

1862. Oldham and Morris, ib. p. 23, Pl. X, 1—3; XI, 1; XII, 1; XIII, 1-2.

This is a very frequent species and one which attains very large dimensions.

Upper Gondwánas: Rájmahál group near Bindrabun, Rájmahál hills.

In connection with these species of *Anomozamites* in the "Upper Gondwánas," I have to mention that recently I have collected several specimens of an *Anomozamites* from "*Lower Gondwánas*" in the Aurunga coalfield, *viz.*, in the Barákar group; they will be described and illustrated on the next opportunity.

Genus *Zamites*, Bgt.

Zamites proximus,[§] Feistm.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. 63, Pl. XLI, fig. 1-2.

Upper Gondwánas: Rájmahál group near Murrero, Rájmahál hills.

Genus *Glossozamites*,[‖] Schimp.

Glossozamites stoliczkanus,[¶] Feistm.

1879. Feistmantel, Talchir-Karharbari Flora, Pal. ind. Gondwána Flora, Vol. III, p. 19, Pl. XX, figs. 4-5.

Lower Gondwánas: Karharbári group, in the Karharbári, coalfield.

---

[*] Proper name (Lindley, the botanist).

[†] Proper name.

[‡] Distinguished.

[§] Very closely related.

[‖] Glossa (gr.) = tongue; and *zamites*.

[¶] Proper name.

Genus *Podozamites*, F. Br.

This genus is represented here by detached leaflets only, which however are very numerous.

Podozamites lanceolatus,* Lindl. and Hutt.

1877. Feistmantel, Pal. ind., Gondwána Flora, Vol. II, p. 91, Pl. III, 7-14; IV, 1-10.

Very numerous in the

Upper Gondwánas: Jabalpur group on the Sher river, Sátpura basin, Bansa and Chandia South Rewah basin.

Podozamites lanceolatus, var. *spathulatus*.†

1877. Feistmantel, *l. c.*, p. 92, Pl, IV, 11-12.

Upper Gondwánas: Jabalpur group, Chandia, South Rewah basin.

Podozamites hacketi,‡ Feistm.

1877. Feistmantel, ib. p. 92, Pl. VII, 4-5.

Upper Gondwánas: Jabalpur group, on the Sher river Sátpura basin.

Podozamites comp. *lanceolatus*, Lindl. and Hutt.

1879. Feistmantel, Pal. ind.; Gondwána Flora, Vol. I, p. 210, Pl. IX, figs. 9-10.

Upper Gondwánas: Sripermatur (Vemáveram) group, at Vemáveram, South Kistna district.

With *Podozamites* of the upper Gondwánas a cycadeaceous fossil of the Lower Gondwánas, where it is very numerous, is in close relation.

Genus *Nöggerathiopsis*,§ Feistm.

1879. Feistmantel, Gondwána Flora, Vol. III, p. 23.

1881. Suppl. ib. pp. 55-59.

I have established this genus upon certain leaves, which were at first classed with *Nöggerathia*; but they do not belong to that genus, being more closely related to another (*Rhiptozamites*, Schmalh.) from the Siberian (Altai) Jura. The same genus also occurs in Australia, both in the lower (carboniferous) and upper (permian?) coalmeasures; in India it has a distribution through the entire lower Gondwánas, and passes also into the upper Gondwánas.

---

* Lanceolate.

† Spatulate.

‡ Proper name.

§ Nöggerathia, the name of a fossil, and *opsis* (gr.) = appearance = a fossil with the appearance of Nöggerathia.

I think they all belong to one species.

Nöggerathiopsis hislopi,[*] Feistm.

1879. Feistmantel, *l. c.*, p. 23, Pl. XIX, 1-6; XX, 1; p. 58, Pl. XXVIII, 1-7; XXIX, 1-4; XXX, 5-9.

Spatulate leaves, of varying size, with numerous, straight, slightly radiating and several times forked veins. They are apparently the pinnulae of a pinnate leaf.

Lower Gondwánas: a. Talchir shales in the Deoghur (Karaun) and Káranpúra coalfield.

b. Karharbári beds, in the Karharbári and Mohpáni coalfield.

c. Barákur group in the Ramkola coalfield, at Barkoi in the Umrét coalfield, C. Prov.

d. Raniganj (Kámthi) group in the Raniganj coalfield, South Rewah basin, and in the Nágpur area.

Upper Gondwánas: From Parsora near Beli, South Rewah basin, in red shales, which are placed by Mr. Hughes in the upper Gondwánas.

A variety with a more rhomboidal leaf was distinguished by me as *Nögg. hislopi* var. *rhomboidalis* (*l. c.*, p. 24) from the Karharbári beds of of the Karharbári coalfield.

Genus *Ptilophyllum,*[†] Morr.

1837. Morris, in Grant's, Geol. of Cutch; Transact. Geol. Soc. Lond. 2nd ser. Vol. V, Pl. XXI.

This is a very common cycadeaceous plant in the upper Gondwánas.

Ptilophyllum acutifolium,[‡] Morr.

1837. Morris, *l. c.*, Pl XXI, figs. 1-3.

1862. Oldham and Morris, Rájmahál Flora, *l. c.*, p. 19, Pls. XX—XXI, 2.

1876-79. Feistmantel, Gondwána Flora, Vols. I—II.

The largest form of the genus.

Upper Gondwánas: a. Umia group in Kach., *b. Jabalpur group*, Sátpura and South Rewah basin *c. Sripermatur group*, South Godávari and South Kistna district, Sripermatur area and Trichinopoly district, (Utatúr plant beds) and near Chirakunt middle Godávari; *d Rájmahál group* in the Rájmahál hills, and South Godávari.

---

[*] Proper name.

[†] Ptilon (gr.) = a feather; phyllum (gr.) = leaf.

[‡] Acutus (lat.) = pointed, sharp; folium = leaf.

Ptilophyllum cutchense,[*] Morr.

1837. Morris, ibid. *l. c.*, Pl. XXI, 4.

1862. Oldham and Morris, ib. *l. c.*, p. 30, Pl. XXI, 5-6, XXII.

1876. Feistmantel, Kach Flora, Gondwána Flora, Vol. II, Pl. IV, fig. 6, 7; V, 1, 2*a*, 3; VII, 3, and other papers.

Upper Gondwánas: a. Umia group in Kach; *b. Jabalpur group* Sátpura and South Rewah basin; *c. Sripermatur group* South Kistna district and Sripermatur area. *d. Rájmahál group* in the Rájmahál hills and South Godávari district.

Ptilophyllum cutchense var. *minimum*,[†] Feistm.

1876. Feistmantel, Kach Flora; Gondwána Flora, Vol. II, p. 44, Pl. VII, fig. 1.

Upper Gondwánas: Umia group in Kach (near Kukurbit).

Ptilophyllum brachyphyllum,[‡] Feistm.

1867. Feistmantel, Kach Flora, *l. c.*, p. 45, Pl. VII, 3.

Upper Gondwánas: Umia group Kach.

Ptilophyllum tenerrimum,[§] Feistm.

1877. Feistmantel, Rájmahál Flora, in Gondwána Flora, Vol. I, p. 118.

Upper Gondwánas: Rájmahál group near Onthea, in the Rájmahál hills.

Genus *Otozamites*,[‖] F. Br.

Both basal angles of the leaflets are rounded. Numerous species are known from the Upper Gondwánas.

Otozamites acutifolius,[¶] Feistm.

1879. Feistmantel, Pal. ind. Gondwána Flora, Vol. I, p. 212, Pl VIII, fig. 12.

Upper Gondwánas: Sripermatur group in the South Kistna district (Vemáveram).

Otozamites abbreviatus,[**] Feistm.

1862. *Palæozamia bengalensis*, Oldh. and Morr. *l. c.*, p. 27 Pl. XIX, 1, 2, 6.

1877. *Otozamites*, Feistmantel, Rájmahál Flora, *l. c.*, p. 68.

---

[*] Appertaining to Cutch (Kach).

[†] Very small.

[‡] Short-leaved.

[§] Very slender.

[‖] The eared Zamites.

[¶] Sharp-leaved.

[**] Shortened.

Upper Gondwánas: a. Rájmahál group, at Surujbera, Rájmahál hills; *b. Sripermatur* group in the South Godávari district (Ragavapuram), South Kistna country (Vemáveram) and Sripermatur area.

Otozamites angustatus,[*] Feistm.

1877. Feistmantel, Jabalpur Flora, Pal., ind. Gondwána Flora, Vol. II, p. 93, Pl. VI, fig. 8, VII, 1.

Upper Gondwánas: Jabalpur group, on the Sher river, Sátpura basin.

Otozamites bengalensis,[†] Schimp.

1862. *Palæozamia brevifolia*, Oldh. and Morris, Rájmahál Flora, *l. c.*, p. 31, Pl. IX, 4-5.

1869. Schimper, Trait. d. Pal. véget. II, p. 172.

Upper Gondwánas: Rájmahál group, at Bindrabun, Rájmahál hills.

Otozamites (Cyclozamites) bunburyanus,[‡] Feistm.

1879. Feistmantel, Gondwána Flora, Vol. I, p. 211; Pl. VII, fig. 5-8; XVI, 2.

Upper Gondwánas: Sripermatur group, at Vemáveram, South Kistna district; and the Sripermatur area.

Otozamites contiguus,[§] Feistm.

1876. Feistmantel, Kach Flora, Gondwána Flora, Vol. II, p. 48, Pl. VII, fig. 4.

Upper Gondwánas: Umia group, in Kach, near Kukurbit.

Reminds of *Otozam. abbreviatus* of the Rájmahál group.

Otozamites distans,[‖] Feistm.

1877. Feistmantel, Jabalpur Flora, Gondwána Flora, Vol. II, p. 93, Pl. VII, fig. 3.

Upper Gondwánas: Jabalpur group, on the Sher river, Sátpura basin.

Otozamites comp. *goldiaei*,[¶] Bgt.

1876. Feistmantel, Kach Flora, p. 49, Pl. XI. 3-4.

Upper Gondwánas: Umia group, Kukurbit in Kach.

Otozamites gracilis,[**] Schimp.

1877. Feistmantel, Jabalpur Flora, *l. c.*, p. 93, Pl VI, figs. 5-7; VII, 2.

Upper Gondwánas: Jabalpur group on the Sher river, Sátpura basin.

---

[*] Narrow.

[†] Appertaining to Bengal.

[‡] Proper name.

[§] Contiguus (lat.) = being in contact.

[‖] Apart.

[¶] Proper name.

[**] Pretty.

Otozamites hislopi,[*] Oldh. (Mss.)

1877. Feistmantel, Jabalpur Flora, *l. c.*, p. 92, Pl. VI, figs. 3-4; XI, 1.

Upper Gondwánas: a. Jabalpur group on the Sher river, Sátpura basin, *b. Sripermatur* group at Vemáveram, South Kistna district.

Otozamites imbricatus,[†] Feistm.

1876. Feistmantel, Kach Flora, *l. c.*, p. 48, Pl. VIII, fig. 1.

Upper Gondwánas: Umia group near Loharia in Kach.

Otozamites oldhami,[‡] Feistm.

1862. *Palæoz. bengalensis* var. *obtusa*, Oldham and Morr. *l. c.*, p. 28, Tab. XIX. figs. 3-5.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. 68.

Upper Gondwánas: Rájmahál group at Surujbera, Rájmahál hills.

Otozamites parallelus,[§] Feistm.

1879. Feistmantel, Gondwána Flora, Vol. I, p. 212, Pl. VIII, 5.

Upper Gondwánas: Sripermatur group at Vemáveram, South Kistna district.

Otozamites rarinervis,[‖] Feistm.

1879. Feistmantel, Gondwána, Vol. I, p. 211, Pl. VIII, figs. 8-11; IX, 6.

A small form with very few (3-4) veins in the leaflets.

Upper Gondwánas: Sripermatur group at Vemáveram, South Kistna district; in the Sripermatur area.

Genus *Dictyozamites*,[¶] Oldh.

A genus hitherto confined to India. Leaf very much resembling that of *Otozamites*, but the venation is a nice net-venation radiating from the point of insertion at the base. Only one species.

Dictyozamites indicus,[**] Feistm.

1862. *Dictyopteris*, Morris in Oldham and Morris, Rájmahál Flora, *l. c.*, p. 38, Pl. XXIV, 1, 2.

1877. Feistmantel, ib., *l. c.*, p. 70.

1879. Feistmantel, Madras coast Flora, Gondwána Flora, Vol. I, p. 214, Pl. III—V.

---

[*] Proper name.

[†] Imbricate.

[‡] Proper name.

[§] Parallel.

[‖] Rarus = rare, scarce.

[¶] Dictyon (gr.) = a small net.

[**] Indian.

Upper Gondwánas: *a. Rájmahál group* at Amrapara and Murero, Rájmahál hills, and at Golapili South Godávari district; *b. Sripermatur* group at Vemáveram, Annavalawarpalem, Budávada, Deronaḍula, Godlur section, Idupulapadu, Panur and Razpudi, South Kistna country; Alicur hills, Chumbrumbaucum, Nagari river, Sripermatur, Todukadu, Vellakoti section in the Sripermatur area; Marawatúr Trichinopoli district.

Its distribution thus follows a line in a North-East to South-West direction, beginning in the North-East, and running along the South-eastern coast down to Trichinopoli in the South-West.

Order CYCADEÆ.

Genus *Cycadites*, Bgt.

Cycadites confertus,[*] Oldh. and Morr.

1862. Oldham and Morris, *l. c.*, p. 25, Pl. VII, 4; VIII, 2, and *C. blanfordianus*, ib. p. 16, Pl. IX, 2.

1876. Feistmantel, Rájmahál Flora, *l. c.*, p. 127, Pl. XLVIII, 1.

Upper Gondwánas: Rájmahál group, at Bindrabun, Rájmahál hills.

Cycadites constrictus,[†] Feistm.

1879. Feistmantel, Madras coast Flora, Gondwána Flora, Vol. I, p. 215, Pl. VII, fig. 10.

Upper Gondwánas: Sripermatur group, shales at Vamáveram, South Kistna district.

Cycadites cutchensis, Feistm.

1876. Feistmantel, Kach Flora, Gondwána Flora, Vol. II, p. 50, Pl. XI, fig. 1.

Upper Gondwánas: Umia group, near Kukurbit in Kach.

Cycadites rajmahalensis, Oldh.

1862. Oldham and Morris, *l. c.*, p. 15, Pl. VII, 42, VIII, 1.

Upper Gondwánas: near Bindrabun, Rájmahál hills.

Genus *Williamsonia*, Carr.

1868. Williamson, Transact. Linn. Soc., Vol. XXVI, p. 663, ff. Pl. 52, 53.

1868. Carruthers, ibid., pp. 691, et. f. seq.

Fruits and stems of this plant occurred in the Indian Upper Gondwánas.

---

[*] Very close, referring to the leaflets.

[†] Constrictus (lat.).

Williamsonia gigas,* Carr.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. 75, Pl. XLIV, 2-4.

1862. Oldham and Morris, ib. *l. c.*, Pl. XXXII, 12, XXXIV, (stems) figures only, without description.

Upper Gondwánas : a. Rájmahál group near Bindrabun and Amrapara, Rájmahál hills ; near Golapili, South Godávari district ; *b. Jabalpur group* in the Sátpura basin.

Williamsonia blanfordi,† Feistm.

1876. Feistmantel, Kach Flora, *l. c.*, Pl. XII, figs. 5-7.

Upper Gondwánas : Umia group, near Kukurbit in Kach.

Williamsonia microps,‡ Feistm.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. 129, Pl. XLI, fig. 4, 5.

Upper Gondwánas : Rájmahál group, near Bnskoghát, Rájmahal hills.

Only for the sake of reference I may mention that quite recently Nathorst (in Ofvers. af Kongl. Vetenskaps-Akademiens forhandlingar 1880 No. 9), tried to assign to *Williamsonia* a somewhat different systematical position ; but as his view is based mostly on the same specimens from which Phillips, Carruthers and Williamson treated it as cycadeaceous, doubts may be entertained whether we should disbelieve these three authors until many more typical specimens have been procured. In India those forms, which I referred to *Williamsonia* occurred solely in association with *Cycadeaceæ*.

Squamæ cycadearum, (? Gymnospermarum).

Both in the Upper and Lower Gondwánas there occur certain scale-like leaflets, which appear to belong to similar forms known from elsewhere, and attributed to cycadeaceous or gymnospermous plants, as scales. Some of those from the Upper Gondwánas could even be classed with a genus from Europe, introduced by Count Saporta, while those of the Lower Gondwánas must be left only with the above general denomination.

Upper Gondwánas : a. Umia group near Bhujuri in Kach ; *b. Sripermatur* group at Vemáveram South Kistna district, and at Chirakunt, middle Godávari, (Maleri beds), *c. Lower Mahádevas*, north face of Latiahar hill, Aurunga coalfield.

Lower Gondwánas : a. Barákar group in the Raniganj coalfield. *b. Raniganj group* in the Rájmahál and Raniganj coalfields.

Semina.

In the Rájmahál group (Upper Gondwánas) there occur small oblong ovate, slightly compressed seeds, which agree in form and structure with similar ones, described as belonging to cycadeaceous plants, with which I have thus classed them (*Cycadinocarpus*).

---

* Gigas = gigantic. † Proper name. ‡ Of small appearance.

Class CONIFERÆ.*

This large class of plants, so widely represented in present times, was also not uncommon amongst the Gondwána fossils, especially in the upper portion, and the *Gingko*-like forms are of special interest.

Order ABIETACEÆ.

Genus *Voltzia*,† Bgt.

Voltzia heterophylla,‡ Bgt.

1879. Feistmantel, Talchir-Karharbári Flora, Gondwána Flora, Vol. III, p. 25, Pl. XXII—XXIV, fig. 4; XXV.

Lower Gondwánas: *a. Karharbári beds*, Karharbári coalfield; *b. Raniganj group*, (?) South Rewah basin.

These are leaved and branched specimens.

But there is a scale-like impression, from the Raniganj group, of the Raniganj coalfield, which has great resemblance with similar scales, attributed to *Voltzia* as fruit scales.

Genus *Albertia*,§ Schimp.

Albertia sp. (comp speciosa, Schimp.)

1879. Feistmantel, ib., *l. c.*, p. 29, Pls. XXIV, 3; XXVI, 2 and ? XXIV, 1, 2.

Occurring together with *Voltzia* in Europe and India.

Lower Gondwánas: *Karharbári beds*, Karharbári coalfield.

Genus *Palissya*,‖ Endl.

Palissya conferta,¶ (Oldh. sp.) Feistm.

1862. *Cunninghamites*, Oldham in Rájmahál Flora, *l. c.*, (no description), Pl. XXXII, figs. 9-10.

1877. Rájmahál Flora, *l. c.*, p. 183, Pl. XLV, 4-9, XLVIII, fig. 4.

Upper Gondwánas: *a. Rájmahál group* near Bindraban, Murero and Onthea, Rájmahál hills; Golapili South Godávari district and Sironcha sandstones near Anáram on the Pranhita river C. Pr.; *b. Sripermatur* group (and Maleri beds) in the Sripermatur area; at Chirakunt and Jangaon, middle Godávari, basin.

---

* Conebearing plants.

† Proper name (Voltz.).

‡ With leaves of two kinds.

§ Proper name (Albert).

‖ Proper name (Palissy).

¶ Confertus = dense.

Palissya indica,[*] Feistm. (Oldh. sp.).

1862. *Taxodites*, Oldham, *l. c.*, (no description), Pl. XXXIII, fig. 6.
1877. Feistmantel, *l. c.*, p. 84; XLV, 9.
1877. Jabalpur Flora, Gondwána Flora, Vol. II, p. 95, Pl. VIII, 1, 2, 4.

Resembling much *Palissya brauni*, Endl.

Upper Gondwánas: Was hitherto found in all the groups of the Upper Gondwánas, in Kach, in the Sátpura basin, South Kistna district, middle Godávari, Rájmahál hills, Athgarh sandstones near Cuttack and on the South Godávari.

Palissya indica, var. *laxa*.

1876. Feistmantel, Kach Flora, *l. c.*, p. 57, Pl. XII, fig. 8, 9.

Upper Gondwánas: Umia group, near Kukurbit in Kach.

Palissya jabalpurensis,[†] Feistm.

1877. Feistmantel, Jabalpur Flora, Gondwána Flora, Vol. II, p. 16, Pl. IX, fig. 1.

Upper Gondwánas: *a. Umia group* near Thann, North Kathiawár; *b. Jabalpur group*, Sátpura basin; *c. Sripermatur* group near Vamávaram South Kistna district, and at Naogaon, middle Godávari.

Genus *Cheirolepis*,[‡] Schimp.

Cheirolepis comp. *münsteri*,[§] Schimp.

1877. Feistmantel, Golapili Flora, Gondwána Flora, Vol. I, p. 185, Pl. VIII, fig. 8.

Upper Gondwánas: Rájmahál group, at Golapili, South Godávari district.

Genus *Araucarites*, Stbg.

Araucarites cutchensis,[||] Feistm.

1876. Feistmantel, Kach Flora, Gondwána Flora, Vol. II, p. 62, Pl. VII, 7, VIII, figs. 2-6, IX, 1-3; XII, 10.
1877. Jabalpur Flora, ib., p. 16, Pl. XIV.

Upper Gondwánas: *a. Umia group* in Kach and Kathiawár; *b. Jabalpur group* in the Sátpura and South Rewah basin; *c. Sripermatur* (Maleri) group middle Godávari (Naogaon), South Kistna district, Sripermatur area and Trichinopoli district.

Resembles very much *Arauc. brodiei* from the English Oolite.

---

[*] Indian.

[†] Jabalpur.

[‡] Cheir (gr.) = hand; lepis (gr.) = scale, referring to the shape of the fruit scales.

[§] Proper name.

[||] The Kach fossil Araucaria.

Araucarites macropterus,[*] Feistm.

1877. Feistmantel, Golapili Flora, *l. c.*, p. 186, Pl. VIII, figs. 9-11.

Upper Gondwánas: a. Rájmahál group at Golapili, South Godávari; *b. Sripermatur* group in the Sripermatur area.

Genus *Pachyphyllum*,[†] Sap. in Schimp.

Pachyphyllum (?) *divaricatum*,[‡] Bunb. sp.

1876. Feistmantel, Kach Flora, *l. c.*, p. 59, Pl. X, fig. 1, 1*a*.

Upper Gondwánas: Umia group, Kukurbit in Kach.

Pachyphyllum heterophyllum,[§] Feistm.

1879. Feistmantel, Madras-coast Flora, (Pal. ind.), Gondwána Flora, Vol. I, p. 219, Pl. XI, fig. 4, XVI, 16.

Upper Gondwánas: Sripermatur group, at Vemáveram, South Kistna country.

Pachyphyllum peregrinum,[‖] Schimp.

1879. Feistmantel, Madras-coast Flora, *l. c.*, p. 218, Pl. XI, fig. 5; XII, 3, 9.

Upper Gondwánas; Sripermatur group, in the South Kistna district and Sripermatur area.

Order Taxodiaceæ.

Genus *Echinostrobus*,[¶] Schimp.

Echinostrobus expansus,[**] Schimp sp.

1876. Feistmantel, Kach Flora, *l. c.*, Pl. IX, 6-9; X, fig. 3, 4.
1877. Jabalpur Flora, *l. c.*, p. 97, Pl. XIX, 4-5.

Upper Gondwánas: a. Sripermatur group, South Kistna district (Vemáveram); *b. Jabalpur group*, Sátpura and South Rewah basin; *c. Umia group*, Kach.

Echinostrobus rajmahalensis,[††] Feistm.

1877. Feistmantel, Rájmahál Flora, *l. c.*, p. (90) 142, Pl. XLV, fig. 3.

Upper Gondwánas: a. Rájmahál group, Rájmahál hills, *b. Sripermatur* group, Sripermatur area.

---

[*] Makros (gr.) = large; pteron (gr.) = the wing.
[†] Pachys (gr.) = thick; phyllum (gr.) = the leaf.
[‡] Divaricatus (lat.) = spread.
[§] With two kinds of leaves.
[‖] Peregrinus (lat.) = strange, foreign.
[¶] Echinus (lat.) = urchin, strobus (lat.) = the cone.
[**] Expanded, spread out.
[††] Appertaining to the Rájmahál hills.

Echinostrobus rhombicas,[*] Feistm.

1877. Feistmantel, Jabalpur Flora, *l. o.*, p. 98, Pl. XI, figs. 6-11.
1879. Madras coast Flora, *l. c.*, p. 220, Pl. XII, fig. 10.

Upper Gondwánas : a. Sripermatur group in the Sripermatur area ; *b. Jabalpur group* South Rewah basin.

Genus *Brachyphyllum*,[†] Bgt.

Brachyphyllum mammillare,[‡] Lindl. and Hutt.

1877. Jabalpur Flora, *l. c.*, p. 96, Pl. X, fig. 12, XI, 2-3 ; XII ; XIII.

Upper Gondwánas : Jabalpur group, Sátpura and South Rewah basin.

Order TAXACEAE.

Genus *Taxites*, Bgt.

Taxites planus,[§] Feistm.

1879. Feistmantel, Madras coast Flora, *l. c.*, p. 221, Pl. XIII, 1, 2-8 ; XIV, 1, 2, 4, 5 ; XV, 2.

Upper Gondwánas : a. Sripermatur group, South Godávari district, South Kistna country and Sripermatur area ; *b. Jabalpur group* near Bansa in South Rewah.

Taxites tenerrimus,[||] Feistm.

1877. Feistmantel, Jabalpur Flora, *l. c.*, p. 98, Pl. VIII, 6-8 ; X, 5, 6-11.

Upper Gondwánas : a. Sripermatur group at Vamáveram, South Kistna district ; *b. Jabalpur group*, Sátpura and South Rewah basin ; *c. Umia group*, Than in North Kathiawár.

Family *Salisburieae*.

Genus *Gingko*, Thunb.

The discovery of this interesting genus in the Jurassic beds of India, adds greatly to its geographical distribution. We know two fossil species from India.

Gingko crassipes,[¶] Feistm.

1877. Feistmantel, Rec. Geol. Survey of India, Vol. X, Pt. 4, p. 197, fig. 6, 7.
1879. Madras coast Flora, *l. c.*, p. 221, Pl. XV, figs. 6-9, XVI, 13.

Upper Gondwánas : Sripermatur group, South Godávari district and Sripermatur area.

[*] Rhombic.

[†] Brachys (gr.) = short, phyllum (gr.) = leaf.

[‡] Mammillaris (lat.) = elevated.

[§] Planus (lat.) = flat.

[||] Very tender.

[¶] With a thick stalk.

Gingko lobata,* Feistm.

1877. Feistmantel, Record etc, *l. c.*, p. 187, fig. 4, 5.
1877. Jabalpur Flora, *l. c.*, p. 98, Pl. I, fig. 1.

Upper Gondwánas : Jabalpur group, Sher river, Sátpura basin, together with *Glossopteris*.

Genus *Euryphyllum*,† Feistm.

Euryphyllum whittianum,‡ Feistm.

1879. Feistmantel, Talchir Karharbári Flora, Gondwána Flora, Vol. III, p. 26, Pl. XXI, fig. 1.

Lower Gondwánas : Karharbári beds, Karharbári coalfield.

Genus *Rhipidopsis*,§ Schmalh.

Rhipidopsis densinervis,|| Feistm.

1880. Feistmantel, Damuda, Panchet Flora, Gondwána Flora, Vol. III, p. 55.

Lower Gondwánas : Kámthi (Raniganj) group South Godávari district.

There is another species, from the Barákar group in the Aurunga coalfield, which closely resembles *Rhipidopsis gingkoides*, Schmalh., from the Petschora country, North Eastern Russia.

INCERTÆ SEDIS.

There are several other fossils, which apparently belong to the *Coniferae*, but the position of which is not quite certain.

Phœnicopsis,¶ Heer sp.

1877. Feistmantel, Jabalpur Flora, *l. c.*, p. 99.

Upper Gondwánas ; Jabalpur group, Sher river, Sátpura basin.

Czekanowskia,** Heer sp.

1877. Feistmantel, *l. c.*, p. 99.

Upper Gondwánas : Jabalpur group near Jabalpur, Sátpura basin.

SEEDS AND STEMS.

In the lower Gondwánas there occur certain seeds, most of them being winged, which from their analogy with similar seeds described from else-

---

* Lobed.

† Eurys (gr.) = broad.

‡ Proper name.

§ Rhipis (gr.) = a fan ; opsis (gr.) = appearance.

|| Densus (latin) close ; nervus (lat.) = vein.

¶ Phönix = a palm, opsis appearance.

** Proper name.

where have to be classed as coniferous seeds; they remind mostly of *Samaropsis*, specimens of which were figured by Heer from the Jura of E. Siberia and the Amur countries and by Prof. Schmalhausen from the Altai, Tunguska river, and the Petschora country.

From the shales at Mángli (C. Prov.) and from the iron shales of the Raniganj coalfield, there are known fragments of stems, which appear to be also of coniferous plants, but they are at present of very little importance, being very fragmentary.

I have thought it more practical and more true to nature to treat of the plant remains in a systematical (biological) order from the whole Gondwána system together, not grouping them according to the divisions of "Lower" and "Upper Gondwánas," as it is now known that this system also geologically forms a continuous series, and from this point of view it is then also easier to form an adequate idea, as to the *Homotaxis* of the system, especially if we consider that most of the plants formerly considered characteristic of the lower Gondwánas freely pass into the "upper portion," as can be gathered from the foregoing pages.

ANIMALIA.

Animal remains as a rule are not very numerous in the groups of the Gondwána system, only in those groups where marine animals occur together with the plants or are contained in beds intercalated with the plant bed, the animal remains are more numerous.

I shall proceed in a biological order.

ANNULOIDA.

ECHINODERMATA.*

Very rare.

Ophiura,† sp.

1879. Madras coast Flora, *l. c.*, p. 224.

Upper Gondwánas : Sripermatur group, South Kistna district.

ANNULOSA.

CRUSTACEA.

Candona‡ *kotaensis*,§ Jones.

1862. Monograph of fossil *Estheriæ*, Palæontographical Soc., p. 127.

Upper Gondwánas : Kota beds, near Sironcha, middle Godávari.

Estheria‖ *kotaensis*, Jones.

1862. Ib., *l. c.*, p. 81.

Upper Gondwánas : group and locality the same.

---

* Echinos (gr.) = a spine; derma (gr.) = skin.

† Ophis (gr.) = snake; ura (gr.) = tail, referring to the thinness of the arms.

‡ Proper name.

§ Locality Kota.

‖ Proper name.

*Estheria mangaliensis,** Jones.

1862. Palæontogr. Society, Monogr. fossil *Estheriæ*, p. 76, Pl. II, 16-23.

Lower Gondwánas : (?) Kámthi group at Mángli, South of Nágpur.

This species was also identified by Prof. Geinitz from rhätic beds of the Argentine Republic.

Besides this larger form, there also occurs another smaller kind, which appears to be identical with a similar form in the Panchet rocks of the Raniganj coalfield, near Assensole.

Eryon† comp. *barrowensis,*‡ McCoy.

1877. Feistmantel, Rec. Geol. Survey of India, Vol. X, p. 193, et fig. 8.

Upper Gondwánas : Sripermatur group at Vemáveram, South Kistna district.

Class MOLLUSCA.§

Representatives of this class have hitherto been found in the upper Gondwánas only.

Order BRACHIOPODA.‖

Many *Brachiopoda* occur in the Umia group in Kach, in beds intercalated with the plant beds, while there is a form of a *Rhynchonella* in the *Sripermatur* group in the same beds with the plants.

Order LAMELLIBRANCHIATA.¶

These occur in the *Sripermatur* group at Ragavapuram (South Godávari district), Vemáveram (South Kistna district) and of the Sripermatur area ; most of them are of the same genera (and apparently also of the same species) by which and especially by the common occurrence of the same *Ammonites* the groups of these three districts may safely be correlated, even without reference to the fact that the Floras also are of the same character.

In the Umia group of Kach there are many *Lamellibranchiata* (bivalves) of which I shall mention especially two, as they also occur in the Tripetty sandstones on the S. E. Coast (South Godávari), which represent the Umia group.

---

* Locality Mángli.

† Mytholog. name.

‡ Locality Barrow.

§ Mollis (lat.) = soft, tender.

‖ Brachion (gr.) = an arm ; pus (gr.) = a foot.

¶ Lamella (lat.) branchia (gr.) = gill (having lamellar gills).

Trigonia[*] *Smeei,*[†] Sow.

1841. Trans. Geol. Soc. Lond., Vol. V, pp. 715, 716, Pl. LXI, fig. 5.

Upper Gondwánas : Umia group at Bururia and other places in Kach; and at Innaparazpolliam, about 30 miles North West of Coconada.

Trigonia ventricosa,[‡] Kraus.

1850. Kraus N. Act. Acad. Leop. Car., Vol. XXII, Pt. 2, pp. 456-458, Pl. 49, fig. 2.

1879. Manual Geology of India, p. 261, fig.

Upper Gondwánas : Umia group same localities.

There are other bivalves figured and described by Sowerby (*l. c.*), from Kach, but it is not necessary to enumerate them here, as all the bivalves as well as the *Gasteropda* (of which there are however not many) have still to be properly worked out and described.

Cephalopoda.[§]

The *Cephalopoda* of the Jurassic rocks of Kach have already been figured and described in Ser. IX of the Palæontologia indica, and I shall therefore not quote them here.

I mention this order only on account of one form of *Ammonites*, which is common to the shales at Raguvapuram (South Godávri district) the shales at Vemáveram and other places (South Kistna district) and the Sripermatur area, and helps to correlate the beds of these three areas.

VERTEBRATA.[||]

PISCES.

Remains of fishes are not uncommon in the upper Gondwánas, while in the lower Gondwánas they are extremely rare.

Ganoid fishes.

The only remains of fishes in the lower Gondwánas are scales of ganoid fishes. They were first mentioned by the late Rev. Mr. Hislop.[¶] One or two specimens are amongst the collections of the Geological Survey of India.

In the upper Gondwánas fishes are more numerous; they were partly described in the Quart. Journ. Geol. Soc. London, and partly only recently in the Palæontologia Indica.

---

[*] Treis (gr.) = three; gonia (gr.) = angle = the triangled shell.

[†] Proper name.

[‡] Ventricosus (lat.) = blown up.

[§] Kephale (gr.) = the head; pous (gr.) = the foot.

[||] Vertebra = a backbone.

[¶] Quar. Jour. Geolog. Soc. Lond., Vol. XVII, p. 347.

They are all from the limestones at Kota, near Sironcha, Central Provinces (Kota Maléri beds). The following have hitherto been described.

Dapedius[*] *egertoni*,[†] Sykes.

Quart. Journ. Geol. Soc. Lond., Vol. IX, p. 352.
Aechmodus ... Egerton, ib., Vol. X, p. 367.
Egerton, Pal. ind. Ser., IV, 2, pp. 6-8, Pl. II, 3-5.

Lepidotus[‡] *breviceps*,[§] Egert.

Quart. Journ. Geol. Soc., Vol. X, p. 371, Pl. XII.

L. calcaratus,[‖] Egert.

Pal. ind., *l. c.*, p. 3, Pl. III, 2-3.

L. deccanensis,[¶] Egert.

Quart. Journ. Geol. Soc., Vol. VII, p. 272, Pl. XV.

L. longiceps,[**] Egert.

Ibid., Vol. X, p. 371, Pl. XII.

L. pachylepis,[††] Egert.

Pal. ind., *l. c.*, p. 2, Pl. I.

Tetragonolepis[‡‡] *analis*,[§§] Egert.

Ibid., p. 5, Pl. II, fig. 1.

T. oldhami, Egert.

Ibid., p. 3, Pl. II, fig. 1.

T. rugosus,[‖‖] Egert.

Ibid., p. 6, Pl. II, fig. 2.

[*] Dapedon (gr.) = a pavement.

[†] Proper name.

[‡] Lepidotos (gr.) = scaly.

[§] Shortheaded.

[‖] Calcar (lat.) = a spur.

[¶] Deccan.

[**] Longheaded.

[††] With thick scales.

[‡‡] With four-angled scales.

[§§] Anal.

[‖‖] Rugged.

Dipnoi.[*]

This order includes the interesting genus ***Ceratodus,***[†] which is not uncommon in the red clays of the (Kota) Maléri group at Maléri, in the middle Godávari basin, South of Chanda.

They were originally described and figured by the late Dr. Oldham in the Memoirs of the Geological Survey of India, Vol. I, pp. 300-307. Four species were then distinguished, *viz.*, ***Cerat. hislopianus, Cerat. hunterianus, Cerat. oblongus*** and ***Cerat. virapa.*** These Ceratodus-teeth were recently re-examined by Prof. Miall and discussed and figured in the Palæontologia Indica, Ser. IV, Pt. 2, pp. 9-17, Pl. IV. He however adopts three species only, classing ***C. oblongus*** as a synonym of ***C. virapa.***

AMPHIBIA.[‡]

Labyrinthodontia.[§]

Brachyops[‖] *laticeps,*[¶] Ow.

1855. Owen, Quart. Journ. Geol. Soc. Lond., Vol. IX, p. 37, Pl. II.
1879. Manual, Geol. India, Vol. I, p. 10, figure.

Lower Gondwánas · Shales at Máugli.

Gonioglyptus[**] *longirostris,*[††] Huxley.

1865. Huxley, Pal. ind. Ser. IV, I, pp. 3-6, Pl. VI.
1879. Lydekker, ib. Ser., IV, 3, p. 17, Pl. III, pp. 14-15.

Lower Gondwánas : ***Panchet group,*** near Deoli South West of Assensole, on the Damuda river, Raniganj coalfield.

Pachygonia[‡‡] *incurvata,*[§§] Huxl.

1865. Huxley, *l. c.*, pp. 6-7, figs. 1-2.
1879. Lydekker, *l. c.*, pp. 18-19, Pl. III, figs. 12-13.

Lower Gondwánas : Locality same as above.

Archegosaurus,[‖‖] (?) sp. ?

1864. Journ. As. Soc. Beng., Vol. XXXIII, pp. 336, 442.
1872. Dr. Oldham Rec. Geol. Surv. India, Vol. IV, p. 70.

---

[*] Dis (gr.) twice ; pnoe (gr.) = breadth.

[†] Keras (gr.) horn ; odous (gr.) = tooth.

[‡] Amphi (gr.) = both ; bios (gr.) = life.

[§] Labyrinthos (gr.) = a labyrinth ; odous (gr.) = tooth, referring to the structure of the teeth.

[‖] Short-faced.

[¶] Broadheaded.

[**] Gonia (gr.) = angle (of the mandible) ; glyptos (gr.) = sculpture.

[††] With a long snout.

[‡‡] Pachys (gr.) = thick ; gonia (gr.) = an angle.

[§§] Incurved.

[‖‖] The ancient Saurian.

1873. H. B. Medlicott, Mem. G. S. Ind., Vol. X, p. 159.
1875. H. F. Blanford, Qu. J. G. Soc. London, Vol. XXXI, p. 522.
1879. Feistmantel, Rec. G. S. India, Vol. XII, pp. 76, 78.
1880. Lydekker, J. A. S. Bengal, Vol. XLIX, p. 12.

A skull of a Labyrinthodont animal is referred to this genus, although it appears that it was never thoroughly examined or figured.

Lower Gondwánas : Bijori horizon (= Raniganj group) of the Sátpura basin, near Bijori in the upper Denwa valley ; the name of the horizon is taken from this locality.

REPTILIA.[*]

These are more numerously represented.

Lacertilia.

Hyperodapedon,[†] sp. Huxley.

1868. Huxley, Qu. J. Geol. Soc. Lond., Vol. XXV, figure, pp. 138-151.
1879. Manual, Geology, India, p. 153, and figure.
1880. Lydekker, J. A. S. B., p. 14.
1880. Feistmantel, Rec. Geol. Soc. India, Vol. XII, Pt. 3, p. 189.

Upper Gondwánas : (Kota) Maléri beds, at Maléri, Middle Godávari basin, C. Prov. ; at Tiki in the South Rewah basin.

Crocodilia.[‡]

Parasuchus,[§] (*hislopi* MSS. Huxley).

1870 and 1875. Huxley, Qu. J. G. Soc. London, Vols. XXVI, p. 49, XXXI, p. 423.
1870. Lydekker, Pal. ind. Ser. IV, 3, p. 35.
1880. Feistmantel, R. G. S. India, Vol. XIII, p. 189.

Upper Gondwánas : Same as preceding.

Parasuchian crocodile ; Scute.

1879. Lydekker, Pal. ind. Ser. IV, 3, p. 30, Pl VI, fig. 8.

Upper Gondwánas : Denwa group, Denwa river near Jhirpa, N. E. of Pachmari.

Parasuchian crocodile, Vertebra.

1877. Lydekker, R. G. S. I., Vol. X, p. 34.
1870. Lydekker, Pal. ind. Ser. IV, 3, p. 31.

Upper Gondwánas : Chari group, near Chari in Kach.

---

[*] Repto (lat.) = to crawl.

[†] Hyperos (gr.) = a pestle, club ; dapedon (gr.) = a pavement, referring to the arrangement of the teeth.

[‡] Crocodiles.

[§] Para (gr.) = prefix, expressing a comparison ; suchos = a local name of the crocodile in Egypt.

Sauropterygia.

Plesiosaurus[*] *indicus*, [†]Lyd.

1879. Wynne, Geology of Kach; Mem. Geol. Survey of India, Vol. IX, p. 129, (mentions the jaw.)

1879. Lydekker, Pal. ind. Ser., IV, 3, p. 28. Pl. VI, fig. 1.

Upper Gondwánas : Umia group, near Bururia, Kach.

Anomodontia.

Dicynodon[‡] *orientalis*,[§] Huxley.

1865. Huxley, Pal. ind. Ser., IV, 1, pp. 8-11, Pls. I—V.

1879. Lydekker, ib. Ser. IV, 3, pp. 1-17, Pl. I, II, III, 1-11.

Lower Gondwánas : Panchet group, near Deoli, Damuda river, S. W. Assensole, Raniganj coalfield.

Deinosauria.

Ankistrodon[‖] *indicus*, Huxley.

1865. Huxley, *l. c.*, pp. 11-12, figure on p. 12.

1879. Lydekker, *l. c.*, p. 17.

Lower Gondwánas : Same as preceding.

Concluding remarks.

This sketch being merely written to convey an idea as to the amount and character of the fossils hitherto known from the interesting Gondwána system in India, without the intention of any extensive discussion of its age, the correlation of the groups, or of all the views hitherto proposed and disputed, I shall conclude with a few remarks regarding the chief peculiarities of the fossils of the system.

1. Four of the genera of plants in the lower Gondwánas are also met with in the lower coalmeasures of Australia (*viz.* New South Wales), these are :—*Phyllotheca*, *Vertebraria*, *Glossopteris* and *Nöggerathiopsis*, they are, however, more developed in the upper coalmeasures (New Castle-beds), at the top of the palæozoic epoch, where we also find the first appearance of *Gangamopteris*. By means of these four genera our Damuda Series were formerly correlated with the Australian beds. But while entirely admitting the fact of this common occurrence, we can now state, that *Phyllotheca* on the other hand is very abundant in the Jurassic beds of

---

[*] Plesios (gr.) = near; Sauros; (gr.) = a lizard.

[†] Indian.

[‡] Dis (gr.) = twice; Kyon (gr.) = dog; odus (gr.) = a tooth.

[§] Oriental.

[‖] Ankistron (gr.) = a hook; odus (gr.) = a tooth.

Siberia, the Amur countries and Italy; *Vertebraria*, *Glossopteris* and *Nöggerathiopsis* pass into the upper Gondwánas in India; and *Nöggerathiopsis* has a very close relation in the Jura of the Altai, the Tunguska river and the Petschora country and *Gangamopteris* is in Australia chiefly developed in the Bacchus-marsh beds which are considered to be mesozoic.

2. On the other hand in the Gondwána system, both in the lower and upper portions, there are many forms, which have no representatives in the Australian coalmeasures, though related forms occur in the higher (meszoic) beds elsewhere.

Thus we have very abundantly in the Talchirs the genus *Gangamopteris*, which under similar circumstances occurs in the Bacchus-marsh beds (mesozoic) in Victoria.

In the Karharbári beds there is again abundantly represented *Gangamopteris;* and besides it *Neuropteridium* (single pinnate *Neuropteris* of the Trias) and *Voltzia* (permian, but especially Triassic).

In the Damuda Series there is *Schizoneura* (Trias-Rhätic) a *Cyathea* (jurassic) a *Dicksonia* (related to some jurassic forms) *Asplenium whitbyense* (jurassic) and another form, belonging with a species from the upper beds in Australia probably also to this type; there is a *Merianopteris* (Trias in Europe); there are forms of *Macrotæniopteris* (related with mesozoic forms, one is in the Wianamatta beds in Australia) and there are other *tæniopteroid* plants with mesozoic affinities;

Of *Cycadeaceæ* we have *Pterophyllum*, *Anomozamites* and *Glossozamites* which are predominantly (for the first named) or exclusively (for the two last named) mesozoic.

Of coniferous plants there is *Rhipidopsis* (of the Jura in the Petschora country N. Russia) one of the *Salisbureæ*, and *Cyclopitys*, of the Jura in Siberia, and *Voltzia* (predominantly Triassic).

There are also some seeds with mesozoic affinities.

In the Panchet division there is *Schizoneura*, *Pecopt. concinna* and *Cyclopt. pachyrhachis* which are Triassic and Rhätic.

3. The Upper Gondwána plants do not require any further explanation.

4. But there is, in Kach, the interesting case, that a Flora of middle jurassic type is intercalated with and overlaid by animals of uppermost jurassic age.

5. The animal remains of any importance from the lower Gondwánas, hitherto known, are fresh-water and land vertebrates (*Pisces*, *Batrachia* and *Reptilia*) the relations of which were discussed by Mr. Lydekker, in his above-mentioned paper in this Journal.

The animals of the Upper Gondwánas are somewhat more varied consisting both of land and fresh water animals and of marine animals.

The former are represented by interesting *fishes* and *Reptilia* which show various ranges, when compared with European relations.

The marine animals are on the whole jurassic, representing various groups, up to uppermost Jurassic.

With these few remarks I conclude my sketch of the Gondwána fossils ; my object will have been gained if I succeed in drawing general attention to these interesting remains but more especially that of those who are in charge of collieries or quarries and so induce them to be careful in looking out for specimens. I also desire to show to the scientific world, particularly of Europe, how much has already been accomplished, by the small body of officers employed in these areas, who have many a time to carry on their work under most unfavourable circumstances.

XIII.—*Additional note on the identification of the ancient diamond mines visited by Tavernier.—By* V. Ball, M. A., F. G. S.

[Received July 2nd ; Read July 6th, 1881.]

I return to this subject as since my last paper was published I have obtained some additional information on the subject, part of which is the direct result of the publication of that paper, and the remainder is in further illustration of the views put forward in it.

Raolconda.—By applying what seemed to be a legitimate arithmetical test to the figures given by Tavernier as indices of the position of this place, the conclusion was arrived at that it was to be identified with Rawduconda on the Tungabhadra river. The chief objection to this view was that we had no independent knowledge whatever of there ever having been diamond mines there, but since, as a matter of fact, nothing was known of the Geology, it seemed possible that diamond bearing rocks might occur there. As an alternative the only other place I could suggest was Ramulkota, to which indeed some of Tavernier's stages pointed, but, on the system of calculation adopted, this locality did not seem to fit so well. I did not venture to write on this subject without doing my best to obtain local information, but as it did not come, or rather as that which was received was more of the nature of speculation than actual fact, my paper was printed, and it has had the advantage of leading to the final settlement of the one doubtful point, namely, the position of Raolconda. As will presently be shown by a quotation from Rennell, which was not included in my last paper, this question was discussed and, as we now know, wrongly decided about 100 years ago.

I must here first record my thanks to Mr. Maurice, H. Wilkinson, Secretary to the Nizam in the Public Works Department, for having done all he could to obtain local information for me in Hyderabad. Mr. King on reading my paper has seen his way to identifying the stages between Golconda and Raolconda, some of which, as being common to the routes to either Rawduconda or Ramulkota I have already noted. Mr. King's local knowledge is of course invaluable in an enquiry of this kind, and I may say that I agree with his conclusion and adopt the necessary consequence from it that the league of Tavernier was not the equivalent of the modern French league, as it was taken to be in my calculation, but was only about two miles, and therefore the Gos which contained 4 leagues was equal to 8 miles and was of the same value as the *Gow* of Heyne.*

The stages on Tavernier's route and Mr. King's identification of them are as follow:

Golconda = Golconda.
to Canapour = Ghunpoora Lat. 16°·34′ N. Long. 78°·6′·30″.
to Parquel = Boorgul, Lat. 16°·59′ N. Long. 78°·17·30″ E.
to Cakenol = Kakanoor, Lat. 16°·55′ N. Long. 78°·23′ E.
to Canal-Candanor = Kundanool, Lat. 16° 29′ N. Long. 78°·22′·30″ E.
to Setapour = Satapoor, Lat. 16°·14′·15″ N. Long. 78°·24′30″ E.
to The river = Kistna.
to Alpour = Alumpoor, Lat. 15°·53′ N. Long. 78° 11′·30″ E.
to Canol = Karnul.
to Raolconda = Ramulkota, Lat. 15°·34′ Long. 78° 3′·15″.

The total distance is given by Tavernier as 17 goss which, if the gos equalled 11·12 miles would be 189 miles, but by taking the gos at 8 miles, would be only 136 miles and as Mr. King shows that Tavernier's route was not absolutely direct, the 16 miles, *i. e.*, the excess over the direct distance between Golconda and Ramulkota, namely 120 miles, is at once accounted for. Tavernier gives the distance from his Canol to Raolconda as being 2½ gos this at eight miles to the gos = 20 miles or about the distance from Karnul to Ramulkota. There are the remains of extensive mines at Ramulkota and there is now no room for doubt that it was at this spot that Tavernier saw the diamond bearing stratum, which was very thin, being hooked out by means of iron rods.

Col. Rennells'† remarks on the subject above alluded to were as follow: "Raolconda, a famous diamond mine, is placed in Mr. Montresor's map, about 15 G. miles to the west of Ralicotte, and 12 from the north bank of the Kistnah; but I know not on what authority. Tavernier, who visited Raolconda, gives its distance from Golconda at 17 gos, of four French leagues each. He crossed a river, that formed the common boundary of Golconda and Visiapour, about 4 gos, or more, before he came to Raolconda: and this river can be no other than the Beemah; which, to this day, forms the eastern boundary of Visiapour; and passes 80 or 82 G. miles to the west of Golconda, crossing the road from it to Ralicotte. If we reckon the 82 miles, 13 gos: that is, forming a scale from the distance between Golconda and the river Beemah, each gos will be 6·3 G. miles in horizontal distance (or nearer three than four French leagues); and Raolconda will be placed about 25 G. miles on the west of the Beemah; or 11, east of Ralicotte[*].

---

* It has been already stated in the previous paper, p. 32, that Heyne spoke of a unit of measure called the *Gow* as being equal to 8 miles.

† Memoir on a Map of Hindustan, p. 353.

"If we take the gos at four French leagues, without regarding the proportion arising from the above calculation, it will bring Raolconda very near the situation assigned it by Montresor. But I have nevertheless adopted the former, thinking it, on the whole, the most consistent. Cæsar Frederick says, that the mines (Raolconda) are six days' journey from Bisnagur: but this will apply equally to either of the above positions."

To which may be added that it will also suit the position of Ramulkota which is under 110 miles, but in a different direction altogether, namely, slightly north of east instead of nearly due north. Cæsar Frederick's original statement as translated by Thomas Hickocke[†] is as follows: "Five days' journey (not six) from Bezeneger (*i. e.* Bijayanagar) is the place where they get diamants. I was not there but it was told me that it was a great place, compassed with a wall, and that they sell the earth within the wall for so much a squadron, and the limits are set how deepe or how low they shall digge. Those diamants that are of a certain size and bigger than that size are all for the king, it is many years agone since they got any there."

Elsewhere he says that the diamonds from this region were called *chiappe* to distinguish them from those from Delly and Iaua (= Java?).

Gani Couloür of Tavernier. With reference to this mine, which is famous for having produced the great Mogul Diamond, Mr. King thinks that I have fully established its identity with the modern Kollur on the Kistna. Indeed had a doubt remained it would have been fully dispelled by a further route to Masulipatam from Golconda given separately by Tavernier, and which passes through Kollur or the so-called Gani.

So far as he has been able, Mr. King has offered the following identifications of the localities mentioned in Tavernier's previously quoted itinerary.

Montecour = ? Moonoogodoo, Lat. 17° 6″ N. Long. 79° 7′ 25″.
Nagelpar = Nagoolpad, Lat. 17° N. Long. 79° 42′.
Savaron = Surrawaram, Lat. 16° 52′ 30″ Long. 79° 51′ 30″.
Mellaserou = Mailacheroo.

---

[*] ? = Telicotte in the Kaladgi district.

[†] Hakluyt's Voyages, p. 221.

I would direct the attention of any one knowing the neighbourhood to the identification of Almaspinde, Kaper and Eligada though indeed it is now of no very great importance to fix them.

Tavernier's route to Masulipatam above alluded to is as follows,* the distances in this case being given in *costes* not in *gos.*

Golconda to Tenara,..	4 Costes	
Tenara to Jatenagar, ...	12 ,,	
Jatenagar to Patengi, ...	12 ,,	
Patengi to Penguel,..	14 ,,	
Penguel to Nagelpar (Nagoolpad),........................	12 ,,	17 miles.
Nagelpar, to Lakabaron (Lukkarum), ...	11 ,,	15 ,,
Lakabaron to Coulour (Kollur),................	11 ,,	15½ ,,
There runs a great river by the town of Coulour, which falls into the gulf of Bengala near Masulipatam.		
Coulour to Kah Kaly,..	12	
Kah Kaly to Beyouar (Bezwada),........................	6	
Near Beyouar you must repass the river of Coulour (*i. e.*, Kistna) Beyouar to Vouchir, ...	4 ,,	
Vouchir to Nilimor,..	4 ,,	
Half way between Vouchir and Nilimor you cross a great river on a timber floating bridge.		
Nilimor to Milmol, ...	6 ,,	
Milmol to Masulipatam, ...	4 ,,	

It would be useless to attempt to fit Tavernier's distances too closely with modern measurements, but it would seem from the equivalent measurements in miles, taken from the map, that the *coste* here was under 1½ miles. Tavernier speaks of the badness of the roads which no doubt necessitated many turnings. He praises the palkis, wherein "you are carried with more speed than in any part of India."

The value of the *rati* in Tavernier's time is a sore puzzle. He gives it as equal to 3½ grains; these in my calculation of the weight of the great Mogul diamond, as it was when he saw it, I treated of as French grains the equivalent of which would be 2·7 English grains, and I stated that if instead of this we could put into the equation 1·84 or more properly 1·848 we should get out the exact weight of the Koh-i-Nur. Now according to Mr. E. Thomas, F. R. S.† the old *rati* in the normal Hindu system

---

* Travels, Part II, Book I. Chapter XI, p. 69.

† Percy's metallurgy, silver and gold, p. 375.

= 1·75 grains and in Akbar's time = 1·935 grains, the mean of these or 1·8437 was so near the required figure that the matter appeared settled; but in Capt. Hamilton's 'East Indies' dated 1727 there is a very full table of weights in which the *rati* is stated to be equal to 3½ grains English, so that one may fairly despair of solving this question.

In reference to the myth regarding the method of obtaining diamonds described by Marco Polo, Nicolo Conti and many others, not omitting Sindbad the Sailor, I have, since my paper was printed, met with numerous accounts of sacrificial rights connected with the opening of mines. The late Mr. M. Fryar when visiting a tin-washing at Maleewoon in Tenasserim was requested to take off his boots as he was told that on a former occasion a European visitor having walked up to the stream without having done so, the guardian spirit took offence, and the supply of tin ceased till the washers had gone to the expense of sacrificing two buffaloes.

Of especial interest as accounting for the wooden structure which Nicolo Conti supposed was for the purpose of flinging the pieces of meat from one mountain to another is a description by Dr. John Anderson of a sacrifice witnessed by himself during his expedition to Yunan. Two buffaloes were offered up by the Khakyens to the Nâts or evil spirits. The animals having been slaughtered over two bamboo altars were cut up and the meat distributed, certain portions with cooked rice being placed on a lofty bamboo scaffolding for the use of the Nâts. The Nâts under such circumstances would infallibly be represented by birds, and among the birds, in most of the hilly regions of India there would probably be included some of the common white scavenger vultures *(Neophron)*. Curiously enough one of the early accounts mentions white eagles, among the birds which carried away the meat with diamonds sticking to it. A naturalist, however, would object to the idea of this bird carrying anything in talons or bill, it would devour the offering on the spot. The rest of the story is doubtless due to the fertile imagination of a traveller who supposed the preliminary sacrifice to be part of the actual process of finding diamonds.

In conclusion it may be stated that the forthcoming volume on the Economic Geology of India contains a full *résumé* of information on these subjects and that there is also one though less complete in a small volume recently published on the Diamonds, Gold and Coal of India.

XIV.—*List of Diurnal* Lepidoptera *inhabiting the Nicobar Islands.*—*By* J. Wood-Mason, *Deputy Superintendent, Indian Museum, Calcutta,* *and* Lionel de Nice'ville.

[Received January 1st;—Read March 2nd, 1881.]

(With a Woodcut.)

In Mr. F. Moore's paper on 'The Lepidopterous Fauna of the Andaman and Nicobar Islands'[*] only 33 species of Rhopalocera are recorded from all the numerous islands of the latter group. The Museum has, during the past and present years, received from Mr. F. A. de Roepstorff several small collections of Nicobar butterflies numbering some 42 distinct species, of which 25 have not been previously recorded; and, since this paper was read, we have been indebted to the kindness and courtesy of Lieut.-Colonel T. Cadell, V. C., Chief Commissioner of the Andaman and Nicobar Islands, for a collection consisting of very numerous individuals of about 23 species, eight of which we had not before obtained and five of which prove to be new to the Islands; so that in all there have passed through our hands, 47 species of which 30 are now for the first time recorded; this number, of which 4 are new to science and 3 are described as varieties of known forms, added to the 34 previously recorded brings up the total of species known from these islands to 64.

In the absence of *Danais chrysippus* one cannot help speculating as to what Nicobar females of *Hypolimnas misippus* may be like: are they dark-coloured like the males or do they mimic some other red *Danais?*

LEPIDOPTERA RHOPALOCERA.

Family NYMPHALIDÆ.

Subfamily Danainæ.

1. Danais limniace.

Pap. limniace, Cramer, Pap. Exot., 1775, vol. i, pl. 59, figs. D, E.

Nankowri Island *(Moore)*. One male and two females from Kamorta *(Colonel Cadell)*.

2. Danais agleoides.

D. agleoides, Felder, Wien. Entom. Monatschr., 1860, vol. iv, p. 398, ♂; Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 486; *non* Boisd.

D. grammica, Moore, Proc. Zool. Soc. Lond., 1877, p. 581.

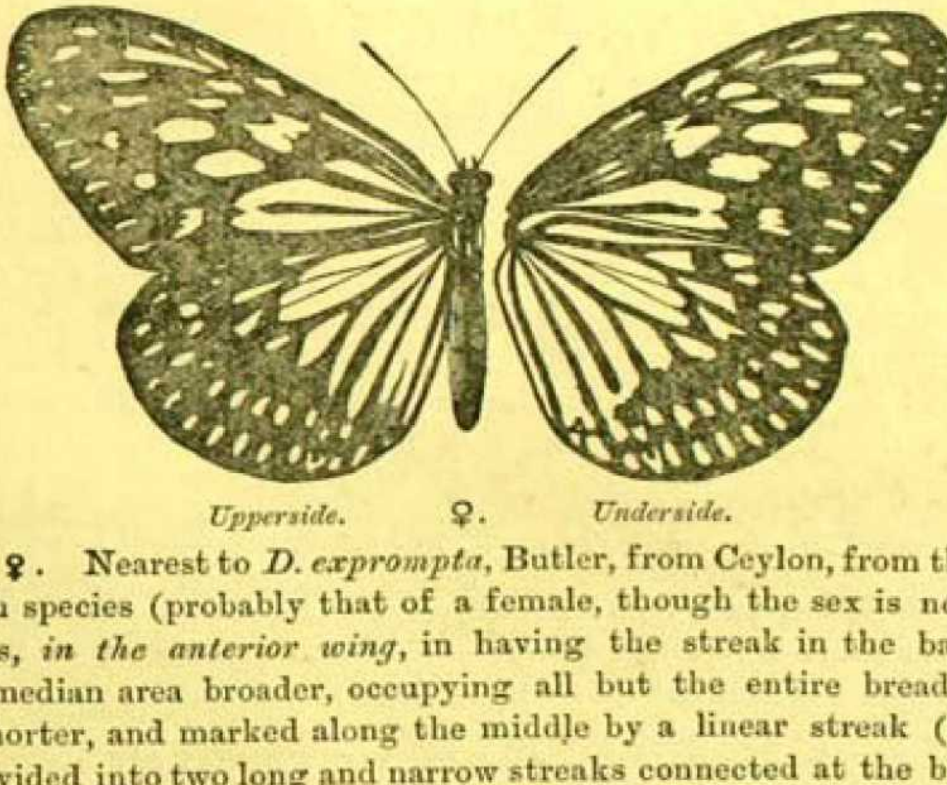
Four males and six females from Nankowri, one male from Great Nicobar (Sambelong), and two males and one female from Kar Nicobar, all absolutely identical in structure, markings, and colour with one another and with specimens from Rangoon (*J. W.-M.*); and Felder states that his specimens from the Great Nicobar agree with the typical ones from Malacca in the Malay peninsula.

---

[*] Proc. Zool. Soc. Lond., 1877, p. 580.

The specimens obtained by Mr. Meldola on Kamorta Island doubtless belong to this species and not to *D. grammica* (Boisduval), which is apparently restricted to South India and Ceylon *(D. ceylanica)*: it is, to say the least, improbable that two such closely allied varieties should inhabit the same limited area (Kamorta, Nankowri, Great Nicobar, and Kar Nicobar Islands). Nankowri, Kamorta, and Trinkut Islands *(Colonel Cadell)*.

3. DANAIS SIMILIS, var. NICOBARICA, nov.



Upperside. ♀. *Underside.*

♂. ♀. Nearest to *D. exprompta*, Butler, from Ceylon, from the figure* of which species (probably that of a female, though the sex is not stated) it differs, *in the anterior wing*, in having the streak in the base of the interno-median area broader, occupying all but the entire breadth of the space, shorter, and marked along the middle by a linear streak (instead of being divided into two long and narrow streaks connected at the base only); and, *in the posterior wing*, in having the cell entirely subdiaphanous greenish or bluish white except for two excessively fine and faint longitudinal and apically-divergent dusky lines much as in *D. juventa* (instead of being divided by two very broad and black ones into two streaks, the posterior of which is strongly recurved at its free end), the discal series of bluish streaks immediately beyond the cell much narrower and shorter, and the ground-colour around them consequently of greater extent and giving to this portion of the wing a much darker appearance, again much as in *D. juventa*.

The male differs from the female in the bluish markings of both wings being of a much deeper shade and, with the exceptions to be stated, larger;

---

* Moore, 'Lep. Ceylon,' pl. 2, fig. 2, ♀.

in the anterior wing being narrower and externally slightly emarginate (instead of well-rounded), with its outer submarginal series of spots reduced to small specks, and the three posterior ones of its inner series externally distinctly tridentate; and in the posterior wing being also apparently somewhat narrower and less rounded externally, with both series of submarginal spots much smaller,—with its two posterior veins margined on both sides with fuscous of a far lighter and duller tint than the rest of the ground,—and with the submedian one of them more prominent with the wing-membrane on each side of it raised into a slight fold and the two light streaks that bound it dirty whitey-brown: the male of this species is, in fact, provided with a distinct, though little-specialized, sexual mark or scent-gland.

Length of anterior wing, ♂ 1·5, ♀ 1·55; whence expanse = ♂ 3·1, ♀ 3·2 inches.

One male and three females, the latter agreeing exactly with one another, from Great Nicobar.

D. vulgaris, Butler, from Upper Tenasserim, Malacca, and Borneo, *D. exprompta* from Ceylon, *D. juventa* from Java, and *D. nicobarica* from the Nicobars appear to us to be only constant geographical varieties of *D. similis* from Formosa and China. Mr. Butler in describing the first-named species (Ent. Month. Mag., 1874, vol. xi, p. 164) gives 'Nepal, Bengal' as localities for it in addition to Singapur and Borneo. This is probably a mistake; we have seen no specimen of it from any region further to the west than Upper Tenasserim.

4. Danais plexippus.

One male and two females from Nankowri Island; five males from Kar Nicobar; also Kamorta *(Moore)*. Numerous specimens of both sexes from Kamorta and Nankowri (*Colonel Cadell*).

5. Danais hegesippus, var. nesippus.

D. nesippus, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 486, ♂; Reise Novara, Lep., p. 347, ♂ ♀.

Four males and five females from Nankowri Island; and Great Nicobar *(Felder)*.

6. Euplœa (Macroplœa) phœbus.

Euplœa phœbus, Butler, Proc. Zool. Soc. Lond., 1866, p. 270, ♂ ♀.

Macroplœa phœbus, Butler, Journ. Linn. Soc. Lond., Zoology, 1878, vol. xiv, p. 292.

One very fine male from Kar Nicobar Island agreeing (except in its rather larger size, its expanse being 5·3 inches) exactly with continental specimens from Cherra Punji.

7. EUPLŒA (SALPINX) NOVARÆ.

Euplœa novaræ, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 482, ♂; id., Reise Novara, Lep., p. 317, pl. 39, fig. 7, ♂.

Kar Nicobar *(Felder)*.

8. EUPLŒA ESPERI.

Euplœa esperi, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 482, ♀, from Kar Nicobar.

Euplœa frauenfeldii, Id., ibid., p. 479, ♂, from Ceylon; Reise Novara, Lep., p. 342, ♂ ♀, pl. 41, fig. 4, ♂, from Ceylon!

Euplœa felderi, Butler, Proc. Zool. Soc. Lond., 1866, p. 275, ♀, from Sumatra.

Euplœa lorquinii, Felder, Reise Novara, Lep., p. 340, ♂ ♀, from Southern China.

Two males and two females from Pulo Kondul; three males and a female from Kamorta; and six males and three females from Trinkut Islands.

Of the males from Pulo Kondul, one differs from the specimen described and figured by Felder in the 'Novara Reise' solely in presenting no trace of a cellular spot in either wing, in having a minute whitish dot intercalated between the first and second and another larger added at the posterior end of the submarginal series of spots on the upperside, and a short linear cellular mark in the right wing only (instead of a geminated one in both wings) with a still shorter streak (obsolete in the left) beyond it on the underside, of the anterior pair of wings; and in there being only a very indistinct cellular point present in the right wing, and in the minute geminated spot (= the foremost of the submarginal series) between the third median veinlet and the discoidal vein being absent from both wings, of the posterior pair on the underside. The other male differs from the preceding in having, on the upperside of both anterior wings, distinct shadows of the rounded white cellular spots of the underside, the second dot in the submarginal series absent, the two discal spots larger, and, on the underside, a discal oval violet-white spot just behind the subcostal followed from before backwards by two linear marks beyond the end of the cell, all three faintly marked on the upperside and larger in the left than in the right wing; on the underside of the posterior wings it presents a distinct rounded cellular spot smaller than those of the anterior wings and a submarginal series of minute dots commencing in one wing with the geminated one, in the other between the two discoidal veinlets and both ending between the submedian and first median veinlet; and on the upperside, no trace of cellular spots, but the submarginal series much as below. The two females differ from one another chiefly in the size of the markings, and from Felder's description in having, on the upperside, three discal white spots (one cellular) with a streak in front of the two extracellular ones, eight submarginal ones with, in one specimen, two linear dashes between the first of the series and the subscostal spot, and, on the underside, a small spot and, in the next cell but one, a linear streak behind the second subcostal spot.

The three males from Kamorta differ from the second of those described above in having the second submarginal dot in the anterior wings more often present than not, a double series of marginal spots in the posterior wing, and all the spots larger and more prominent; the female has no second subcostal spot and the cellular spot in the anterior wings is rounded.

Of the six males and three females from Trinkut, the former also agree with the second of the two from Pulo Kondul in the anterior wings, differing in the great development and prominence of the two marginal series of spots in the posterior ones; the females differ from those of Kondul Island in no respect of any moment.

All the specimens differ from the continental variety *E. lonquinii* in the wings being merely glossed with dark purple-violet, and not "*vivide violaceo-cyaneo suffusæ.*"

9. EUPLŒA CAMORTA.

E. camorta, Moore, Proc. Zool. Soc. Lond., 1877, p. 582, ♂.

Two males and two females from Nankowri Island; two males and one female from Katschall Island; three males and one female from Kar Nicobar; one female from Kamorta Island; and two females from the Great Nicobar.

The males from all the islands shew no variation whatever, all have the basal dark portion of both wings glossed with very dark blue-violet. The females, however, present considerable variation. Those from Nankowri differ from their males only in the subcostal spot on the anterior wing below showing through on the upperside. The one from Katschall is exactly like its male, except in the absence of the usual sexual characters. The Kar Nicobar specimen shows the subcostal spot and another just outside the cell between the second and third median veinlets on the upperside, and a spot between the two branches of the subcostal on the posterior wing; there are also two small indistinct specks near the apex of the anterior wing, the posterior of which only is visible below. That from Kamorta is altogether much paler, the borders to both wings being pale fawn-colour; it has the subcostal and cell-spots on the upperside of the anterior wing. The Great Nicobar females are the most aberrant of all: the anterior wing has on the upperside an increasing series of three subapical spots, a spot at the end of the cell and another just outside it between the second and third median veinlets, and the subcostal spot; and the posterior, a prominent spot between the two branches of the subcostal; all these spots (which are coincident with spots on the underside) are violet-white; on the underside of the anterior wing the spot in the cell, the subcostal one above it, the three subapical ones, an increasing series of spots outside the cell, one in each median interspace, and a large patch below the median vein are all very prominent and (except the three subapical ones, which are whitish above) violet-white; in all the other specimens seen (except the Kar Nicobar one, which has five) and described, there are only four spots; in these there are eight.

10. EUPLŒA (CRASTIA) SIMULATRIX, n. sp.

♂. Wings above spotless black-fuscous suffused with the deepest violet-blue, externally tolerably broadly bordered with paler unglossed fuscous.

Posterior wing with an oval patch of iridescent lighter modified scales occupying about the second and third fifths of the length of the organ, extending from the middle of the discoidal cell to the middle of the interspace between the costal and subcostal veins at its widest part, and bounded in front by an indistinct streak of cretaceous white; and with the wing-membrane in front of this oval patch and of the apical portion of the first subcostal branch cinereous.

Wings below lighter and less sombrely coloured, their dark basal portions being distinctly glossed with purple-violet, more broadly bordered with paler fuscous, and marked with prominent spots and streaks.

Anterior wing with eight spots, *viz.*, a subapical series of three dots, the posterior of which is equal to the other two taken together, a somewhat elongated large spot between the first and second median veinlets, nearly pure white; a reversed comma-shaped spot near the end of the cell, a rounded one and a short linear streak beyond it, the former between the second and third median veinlets and the latter between the second median veinlet and the discoidal vein, and a subcostal spot on a level with the end of the cell, bluish or violet white; with a streak pointed at both ends in the middle of the interno-median area, and, posterior to this, a similarly shaped and placed patch divided by the submedian vein, cretaceous-white; and with the sutural cell behind the whitey-brown patch cinereous and satiny.

Posterior wing with a submarginal series of minute violet-white dots, a cellular spot and a curvilinear series of six just outside it, bluish white, in addition to the usual basal dots.

Length of anterior wing, 1·8; whence expanse = 3·7 inches.

A single specimen from Great Nicobar. On the upperside, it very closely resembles *E. camorta*, of which it is in all probability a mimic, differing from that species, however, in its rather darker and more sombre hue and in being devoid of a silky sexual streak, and on the underside in the presence of a submarginal series of dots in the posterior wing.

Subfamily SATYRINÆ.

11. MYCALESIS (ORSOTRIÆNA) MEDUS.

Papilio medus, Fabricius, Syst. Ent., 1775, p. 488.

„ *hesione*, Cramer, Pap. Exot., 1775, vol. i, pl. 11, figs. C, D.

Orsotriæna medus, Moore, Trans. Ent. Soc. Lond., 1880, p. 160.

One male from Katschall Island; a male and a female from Great Nicobar; a female from Nankowri Island; and Kamorta Island (*Moore*). Numerous specimens from Nankowri and Kamorta Islands (*Col. Cadell*).

12. MYCALESIS (CALYSISME) DRUSIA.

Pap. drusia, Cramer, Pap. Exot., 1775, vol. i, pl. 84, figs. C, D, ♀.

Mycalesis drusia, Butler, Cat. *Satyridæ*, B. M., 1868, p. 133; id., Cat. Fabrician Lep. B. M., 1869, p. 33.

Calysisme drusa, Moore, Trans. Ent. Soc. Lond., 1880, p. 161.

Five males and three females from Nancowry Island; one male each from Katschall and Kar Nicobar Islands; one female from Great Nicobar; and Kamorta Island (*Moore*). Numerous specimens ♂ ♀ Kamorta and Nankowri (*Col. Cadell*).

13. ELYMNIAS MIMUS, n. sp.

♂. Wings above black fuscous of a fuliginous tint somewhat paler on the costal margin of the anterior wing, still paler at the apex of the same wing, and on the outer margins of all the wings, the extreme edges and the points of the lobes of which margins are again darker; with the incisural cilia whitish.

Wings beneath brownish, coarsely and confluently striated with rich dark chestnut for their basal two-thirds, whence both wings become suddenly lighter owing to the striation being more rare as well as lighter coloured.

Anterior wing with the outer margin of the closely striated portion sharply defined, and angulated outwards between the first and second discoidal veinlets; and with the ground colour immediately beyond the anterior and shorter of the two lines forming the angulated outline of the basal portion whitish.

Posterior wing with the ground beyond the chestnut base pale sepia passing to whitish around the outer-marginal ocelli, obscurely and rarely striated before, but more richly and closely at the outer margin beyond the ocelli with vandyke-brown; and with seven suboval black ocelli occupying the same positions as those of *E. dusara*, of which the second is the largest of all but only slightly larger than the fifth, the first is subequal to the sixth, and the third, fourth, and seventh (which touches the sixth in the same cell) are subequal and much smaller than the rest, the first and second have a white pupil (which in the latter is eccentric) irrorated at the edges with light metallic greenish-blue scales, and the rest have the pupil almond-shaped with some mauve-coloured irrorations on and around its inner end.

♀. Wings above much lighter, with a submarginal whitey-brown common band which passes straight across both wings from near the anal angle of the posterior one to the second branch of the discoided vein of the anterior, at which point it turns sharply off at a right angle to the costal margin; with the light intervals between the striations of the underside visible as light bars on the anterior margin, and the apical dark portion lighter than the basal, of the anterior wing; and with two infuscations (less perceptible in the darker male) on the posterior wing corresponding to the fifth and sixth ocelli of the underside.

Wings below lighter, with the anastomozing chestnut striæ less confluent permitting more of the ground-colour to be seen; and with the anterior ocellus larger and much diffused circumferentially, the second with the pupil rudimentary, and the third larger than the fourth.

Length of anterior wing ♂ 1·3, ♀ 1·4; whence expanse = ♂ 2·7, ♀ 2·9 inches.

One male from Kar Nicobar and one female from Pulo Kondul.

Closely allied to *E. dusara* (*panthera*, Fabr.), Horsfield, Cat. Lep. E. I. Co., 1829, pl. v, figs. 7, 7*a*, ♀ (no description), from which it would appear to differ in having the light band of the anterior wing distinctly angulated and the costal margin of the same barred with lighter, in its more highly developed and unequal ocelli, in the more abrupt definition of the basal chestnut from the rest of the underside, and apparently also in its more strongly lobed wing-margins and finer tails.

It in all probability mimics *Euplœa camorta*, a species which abounds on all the islands of the Nicobar group.

Subfamily NYMPHALINÆ.

14. CETHOSIA NIKOBARICA.

C. nikobarica, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 484, ♂; id., Reise Novara, Lep., pl. 48, figs. 7, 8, ♂; Moore, Proc. Zool. Soc. Lond., 1877, p. 583, ♀.

Five males and five females from Nankowri Island; one female from Great Nicobar; and two females from Pulo Kondul Island.

This species is equally common at Port Blair, specimens from which place are absolutely identical with those before us from the Nicobars.

15. CIRRHOCHROA NICOBARICA, n. sp.

♂. Wings above bright fulvous powdered with fuscous scales at the bases, and along each side of the discocellular veinlets.

Anterior wings with the costal margin narrowly, the apex broadly, and the external margin decreasingly fuscous, and with a small obscure patch of fuscous scales near the inner angle.

Posterior wings with a thin discal striga somewhat discontinuous and nearly straight anteriorly but zigzaged posteriorly, seven rather large rounded spots, and a short streak between the median and discoidal veins in the same line as the spots, black, and beyond the spots three regularly engrailed fuscous strigæ, one of which is marginal and the innermost of which is the darkest and is connected with the discal thin striga by the dark brown margins of the veins, with the usual white blotch between the anterior black spot and the discal striga, with the dusky fulvous interval between the two outermost marginal fuscous strigæ continued for a short distance on to the fuscous margin of the anterior wing at the inner angle.

Wings beneath much paler, all faintly suffused with lilac, with a common opalescent discal band inwardly bounded with dusky, scarcely perceptible in the anterior ones but prominent in the posterior, in which it is nearly straight externally but dentate internally.

Posterior wings with five of the black spots of the upperside (two interspaces being devoid of a spot) smaller than above, seated, the foremost one wholly, the second and last (which is twinned) partially, upon a dusky ground, the remaining ones upon fulvous of a brighter shade than the rest of the wing; beyond the spots with two opalescent lunular bands, the first the broader and internally margined with diffused dusky and the second the narrower and sharply defined, both of which bands are continued faintly and diffusedly on to the anterior wings; and with the usual basal and discocellular pale fuscous marks.

Length of anterior wing 1·2; whence expanse = 2·5 inches.

A single specimen from Great Nicobar.

Apparently most nearly allied to *C. malaya*, Felder, from the Malay Peninsula.

16. MESSARAS ERYMANTHIS, var. NIKOBARICA.

M. erymanthis, var. *nikobarica*, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 486.

Great Nicobar (*Felder*), one male from Kamorta (*Col. Cadell*).

17. ATELLA ALCIPPE.

One very small male from Katschall Island.

18. PYRAMEIS CARDUI.

Papilio cardui, Linnæus, Syst. Nat., 1767, I, 2, p. 774.

One male from Kamorta (*Col. Cadell*).

19. Junonia asterie, var. nikobariensis.

J. asterie, var. *nikobariensis*, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 482.

Kar Nicobar (*Felder*).

20. Junonia laomedia.

Four males and five females from Nankowri (*A. de R.*) and Kamorta (*Col. Cadell*).

21. Hypolimnas misippus.

Two males, but no females as yet, from Nankowri or any other island.

22. Hypolimnas bolina.

One male from the Great Nicobar; and Tillangschong Island (*Felder*).

23. Neptis nicobarica.

N. nicobarica, Moore, Proc. Zool. Soc. Lond., 1877, p. 586, ♂ ♀.

Numerous males and females from Nankowri Island, one female each from Nankowri (*Col. Cadell*), Kamorta, and Kar Nicobar Islands, and Takoin.

24. Neptis matuta.

N. matuta, Hübner, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 483.

Nankowri Island (*Felder*).

25. Neptis mananda, Moore.

N. mananda, Moore, Proc. Zool. Soc. Lond., 1877, p. 586, ♂ ♀; pl. lviii, fig. 4, ♀.

One female from Kar Nicobar Island. It agrees with Port Blair (Andaman) specimens, except that the markings are pure instead of ochreous white, and the subbasal band of posterior wing is wider.

26. Tanaecia cibaritis.

One female from Nankowri Island identical with Port Blair specimens.

Family ERYCINIDÆ.

27. Abisara bifasciata.

A. bifasciata, Moore, Proc. Zool. Soc. Lond., 1877, p. 587; pl. lviii, fig. 1, ♀.

One male from Kar Nicobar Island. It differs from female specimens (the Museum has as yet received no males) from Port Blair in the markings on both upper and underside being dusky greenish instead of pure white; the upperside is also brilliantly suffused with purple, especially on the posterior wing; the female shows no trace of this colour.

Subfamily LYCÆNIDÆ.

28. CURETIS THETYS.

A single female of this variable and widely distributed species from Nankowri Island, and another from Trinkut (*Col. Cadell*).

29. CASTALIUS MANLUENA.

Lycæna manluena, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 484, ♀.

Kondul Island (*Felder*).

30. LAMPIDES ÆLIANUS.

Two males and a female from Kamorta, Trinkut (*Col. Cadell*), and Nankowri Islands all extremely pale, especially below.

31. LAMPIDES PANDAVA.

Numerous specimens from Nankowri (*Col. Cadell* and *A. de R.*) and Katschall Islands (*A. de R.*); Nankowri and Kamorta (*Moore*); Trinkut and Kamorta Islands and Takoin (*Col. Cadell*).

32. LAMPIDES STRABO.

Three males from Nankowri (*Col. Cadell* and *A. de R.*); two males Trinkut, one male Kamorta, and one female Takoin (*Col. Cadell*).

33. LAMPIDES PARRHASIUS.

Lycæna parrhasius, (Fabr.), Horsfield, Cat. Lep. E. I. Co., 1829, p. 86, ♂ ♀.

A male from Nankowri.

34. LAMPIDES PLATO, var. NICOBARICUS.

Numerous males and females from Nankowri (*A. de R.*): Kamorta, Nankowri, and Trinkut, (*Col. Cadell*).

The males differ from specimens of the same sex from Calcutta, Sikkim, S. India, Ceylon, and Bombay in the greater extent of the blue on the anterior wing, the broad black outer border of which does not stretch back towards the middle of the costa in the manner described by Horsfield.

35. LAMPIDES PLUMBEOMICANS, var. NICOBARICUS.

L. plumbeomicans, Wood-Mason and de Nicéville, Journ. Asiat. Soc. Beng., vol. xlix, pt. 2, 1880, p. 231, ♂ ♀.

One male from Katschall Island differing from Andaman (Port Blair) specimens in having the underside purplish slate-colour, the marginal and submarginal macular fasciæ more distinct, iron-grey, narrower, and separated by a wider space of the ground-colour from the discal fascia; in having a very much larger subanal black spot, which is more broadly encircled with brighter orange; and in having all the fasciæ more sharply defined.

36. LAMPIDES CNEJUS.

Kamorta (*Moore*).

37. LAMPIDES KINKURKA.

Lycæna kinkurka, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 481; id., Novara Reise, Lep., p. 273, pl. 34, figs. 24, 25, ♀.

Kar Nicobar (*Felder*); and Nankowri (*Moore*).

38. LAMPIDES KANKENA.

Lycæna kankena, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 481, ♂; id., Reise Novara, Lep., p. 270, pl. 34, fig. 37, ♂.

Kar Nicobar (*Felder*).

39. LAMPIDES KONDULANA.

Lycæna kondulana, Felder, Verh. zool.-bot. Gesellsch. Wein, 1862, vol. xii, p. 484, ♂; id., Reise Novara, Lep., p. 271, pl. 34, fig. 6, ♂.

Kondul Island (*Felder*).

40. LAMPIDES MACROPHTHALMA.

Lycæna macrophthalma, Felder, Verh. zool-bot. Gesellsch. Wien, 1862, vol. xii, p. 483, ♂; id., Reise Novara, Lep., p. 275, pl. 34, fig. 35, ♂.

Pulo Milo (*Felder*).

41. LAMPIDES ROSIMON.

Pap. rosimon, Fabr., Syst. Entom., 1775, p. 523.

A single bad specimen from Nankowri (*Col. Cadell*).

42. POLYOMMATUS KARSANDRA.

P. karsandra, Moore, Proc. Zool. Soc. Lond., 1865, p. 505, n. 106; pl. 31, fig. 7.

One female from Kamorta (*Col. Cadell*).

43. POLYOMMATUS SANGRA.

P. sangra, Moore, Proc. Zool. Soc. Lond., 1865, p. 772; pl. 41, fig. 8, ♂.

Kamorta Island (*Moore*).

44. HYPOLYCÆNA THECLOIDES.

Myrina thecloides, Felder, Wien. Entom. Monatschr., 1860, vol. iv, p. 395, ♂; *Hypolycæna thecloides*, Hewitson, Ill. D. Lep., *Lyc.*, pl. 22, figs. 9, 10, ♂.

One male from Katschall and two from Nankowri Islands; Malay Peninsula (*Felder*); and Singapore (*Hewitson*).

45. SITHON SUGRIVA, var. ARECA.

S. sugriva, var. *areca*, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1880, vol. xlix., pt. 2, p. 232, ♂ ♀.

Kar Nicobar (*Felder*).

46. SITHON KAMORTA.

Myrina kamorta, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 485, ♀.—Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1880, vol. xlix, pt. 2, p. 233, ♂.

One male each from Nankowri and Kar Nicobar Islands; and Great Nicobar (*Felder*).

47. DEUDORIX ORSEIS.

Kamorta (*Moore*).

48. MYRINA ATYMNUS.

Three males from Nankowri Island (*Col. Cadell* and *A. de R.*).

Family PAPILIONIDÆ.

Subfamily PIERINÆ.

49. TERIAS HECABE.

Katschall, Trinkut, and Nankowri Islands; and Takoin, probably a small village near the settlement. Very common.

50. TERIAS NIKOBARIENSIS.

T. nikobariensis, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 480.

We have at last received from Kamorta, through the kindness and courtesy of Col. Cadell, V. C., Chief Commr. of the Andamans and Nicobars, 10 specimens all males, which are no doubt referrible to this species; in one specimen only, however, is the external margin of the posterior wings narrowly and obsoletely bordered with fuscous, the border being reduced to dots sometimes so small as to be barely visible and connected or not with one another by a few fuscous scales; the colour of the specimens is bright lemon-yellow. Kar Nicobar (*Felder*).

51. TERIAS DRONA.

T. drona, Horsfield, Cat. Lep. E. I. Co., 1829, p. 137, pl. 1, fig. 13.

Two males and three females from Kamorta and one female from Nankowri (*Colonel Cadell*).

52. Tachyris paulina, var. galathea.

Pieris galathea, Felder, Verh. zool.-bot. Gesellsch. Wien., 1862, vol. xii, p. 485, ♂.

Two males from Nankowri and Katschall Islands, both having a round spot of black scales between the 2nd and 3rd median veinlets on both sides of the anterior wing, the remains of the intense black spot occupying the same position in the females of typical *T. paulina;* and Great Nicobar (*Felder*).

53. Tachyris panda.

Pieris panda, Godt., Snellen v. Vollenhoven, Faune Entom. Arch. Indo-Néerland., 2 me. Monogr., Fam. des *Piérides*, p. 44, ♂ ♀.

A male from Great Nicobar agreeing perfectly with Vollenhoven's description; Java *(Horsfield, Vollenhoven)*.

54. Catopsilia crocale.

Kamorta Island (*Moore*).

55. Pieris coronis, var. lichenosa.

P. lichenosa, Moore, Proc. Zool. Soc. Lond., 1877, p. 591.

One male from Kar Nicobar Island.

Subfamily Papilioninæ.

56. Papilio aristolochiæ, var. camorta.

P. aristolochiæ, var. *camorta*, Moore, Proc. Zool. Soc. Lond., 1877, p. 592, ♀.

Three males and two females from Nankowri Island; three males and one female from Kar Nicobar Island; two males from Great Nicobar Island; and Kamorta (*Moore*).

57. Papilio polytes, var. nikobarus.

P. pammon, var. *nikobarus*, Felder, Verh. zool.-bot. Gesellsch. Wien, 1862, vol. xii, p. 483, ♀.

One male and two females from Nankowri Island; seven males from Pulu Kondul; two males and one female from Kamorta Island; two females from Kar Nicobar; and two males Takoin (*Col. Cadell*).

All the females from all the islands are of the First Form, *i. e.*, like the males. The male specimens from Pulu Kondul all have on the underside of the posterior wing external to the discal white macular band a series of irregular patches of beautiful blue scales, which forms a very distinct blue macular band across the wing.

58. Papilio agamemnon.

Kamorta Island (*Moore*).

Family HESPERIDÆ.

59. TAGIADES HELFERI.

Pterygospidea helferi, Felder, Verh. zool.-bot. Gesellsch. Wien, 1860, vol. xii, p. 483, ♂.

Pulo Milo (*Felder*).

60. TAGIADES RAVI.

One male from Nankowri Island.

61. HESPERIA MATHIAS.

Hesperia mathias, (Fabr.), Butler, Cat. Fabr. Lep. Brit. Mus., 1869, p. 275, pl. 3, fig. 8, ♂.

Kamorta Island (*Moore*).

62. HESPERIA COLACA.

Two females, one from Kamorta (*Col. Cadell*) and one from Nankowri Island (*A. de R.*).

63. PAMPHILA PALMARUM.

Moore, Proc. Zool. Soc. Lond., 1878, p. 690, pl. 45, figs. 6, 7, ♂ ♀, from Calcutta.

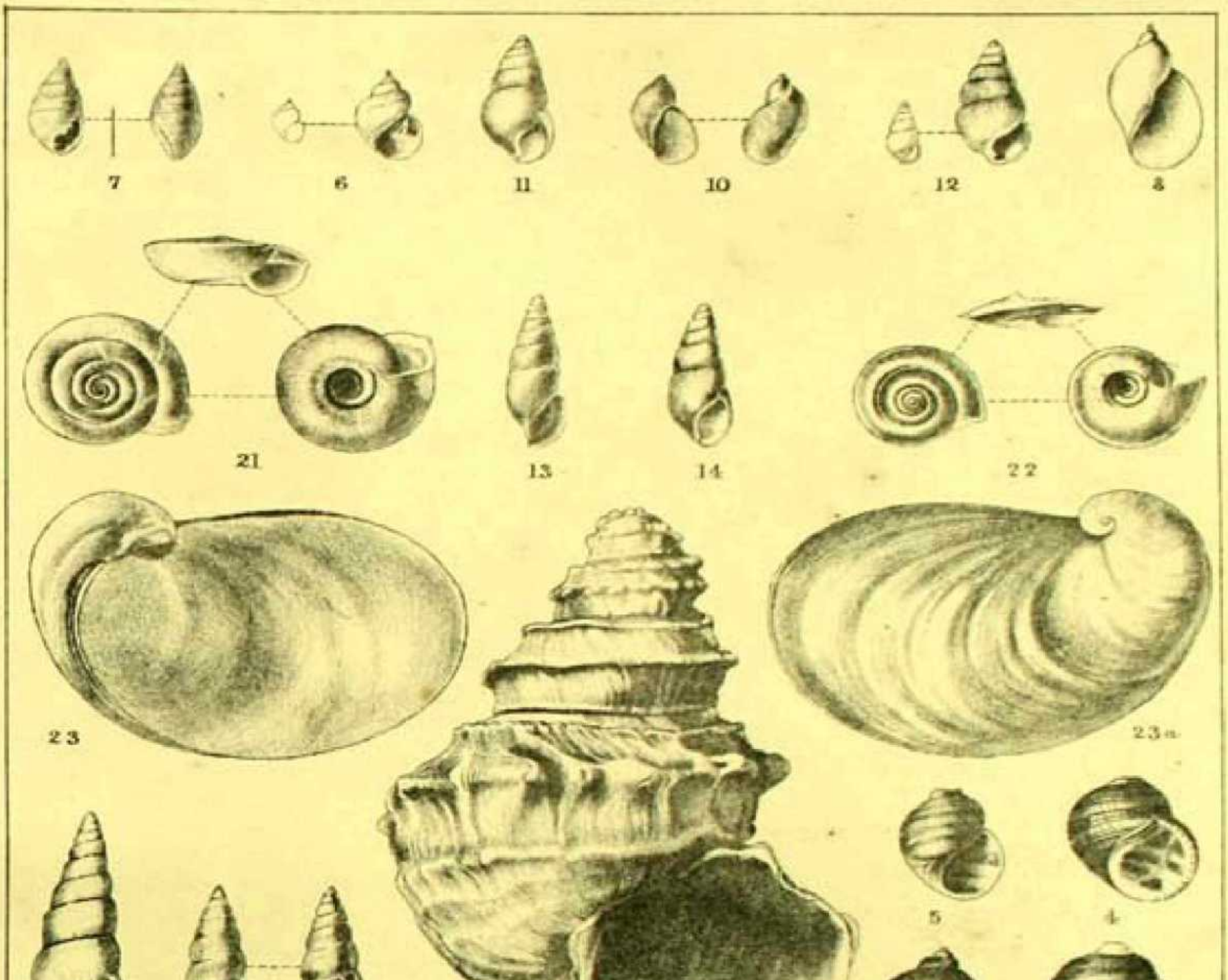
Two males from Katschall and Nankowri Islands, agreeing perfectly with Calcutta specimens.

64. TELEGONUS THYRSIS.

Pap. thyrsis, Fab.. Syst. Ent. 1775, p. 532; *Hesperia pandia*, Moore, Proc. Zool. Soc. Lond., 1865, p. 790.

One male *(Col. Cadell)*.

G. NEVILL.—Journal As. Soc. Bengal, Vol. L, Part II, 1881. PLATE V.

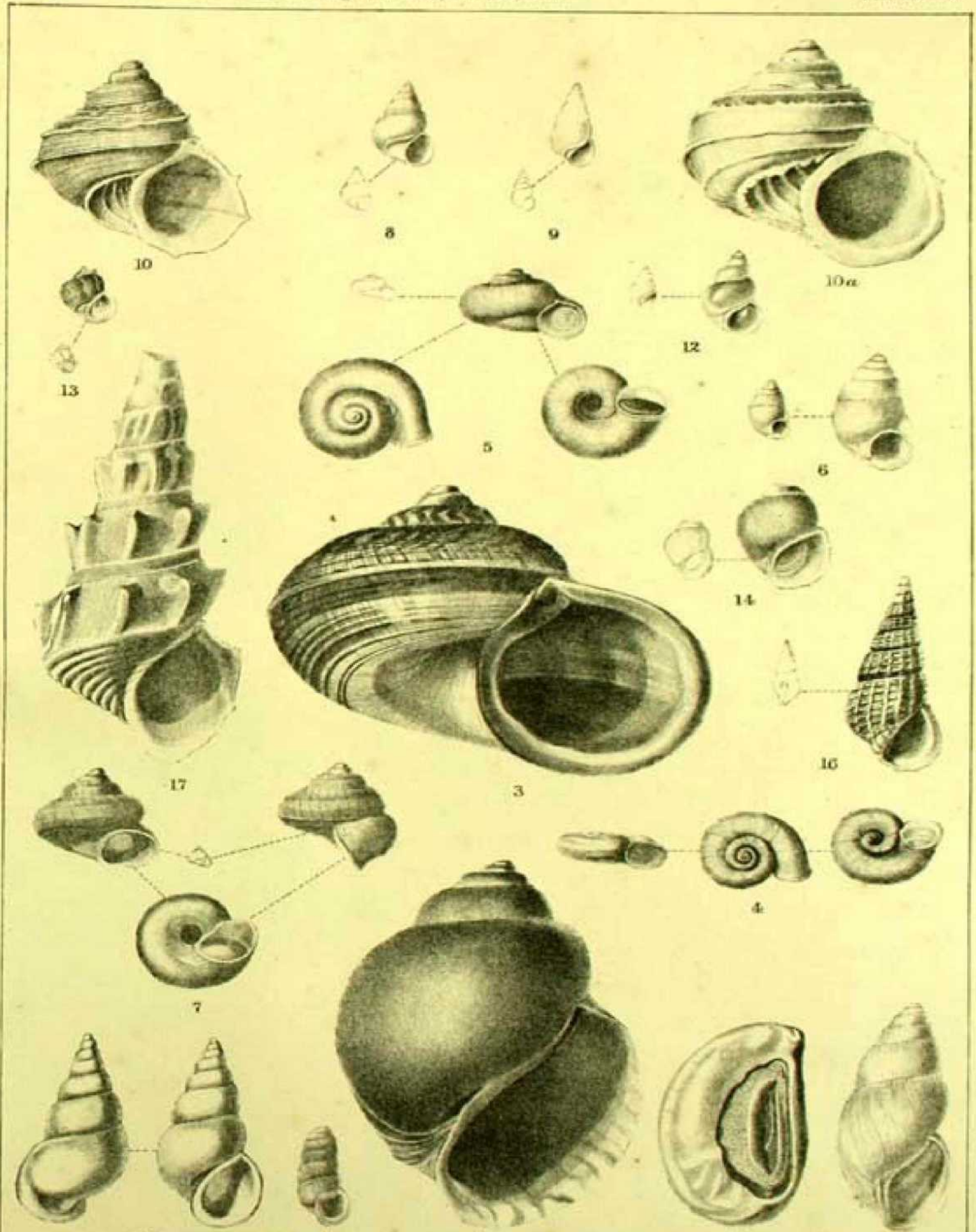


Jules Schaumburg, Lith.

Lithographed at the Surveyor General's Office, Calcutta, July 1881.

G. NEVILL.—Journal As. Soc. Bengal, Vol. L, Part II. 1881.

PLATE VI.

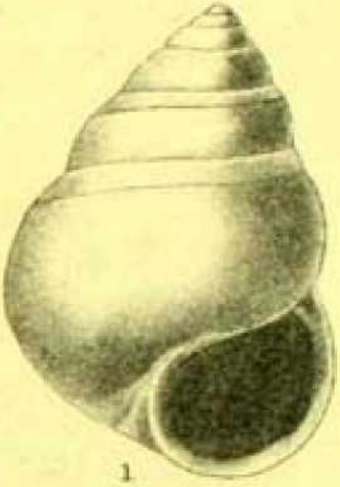


Jules Schaumburg, Lith.

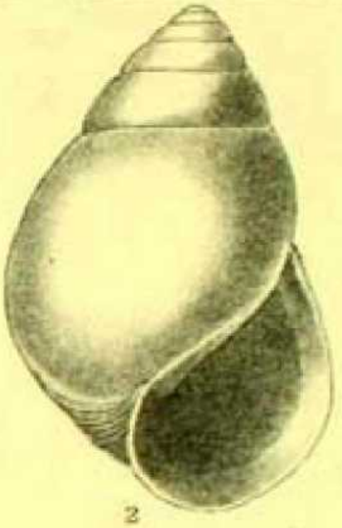
Lithographed at the Surveyor General's Office, Calcutta, July 1881.

G. NEVILL.—Journal As. Soc. Bengal, Vol. L. Part II, 1881.

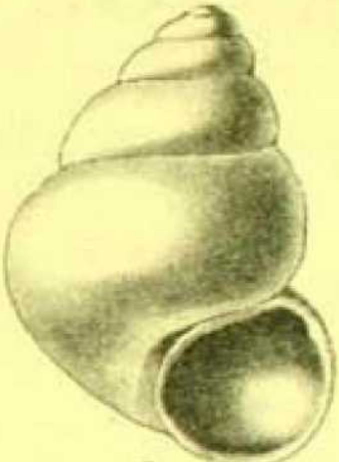
PLATE VII.



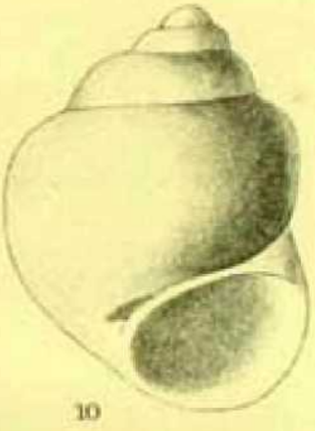
1



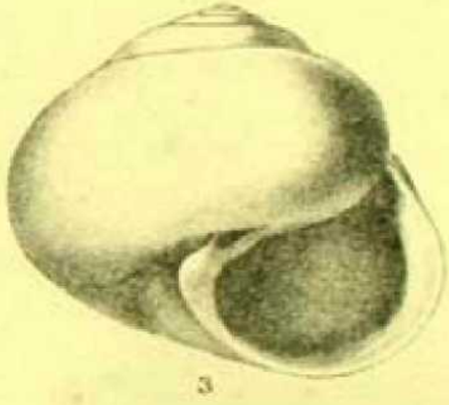
2



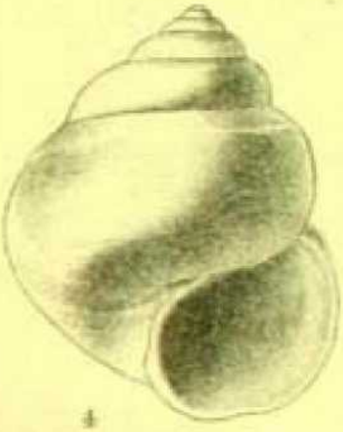
7



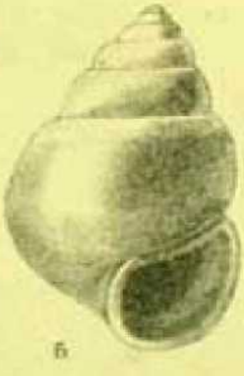
10



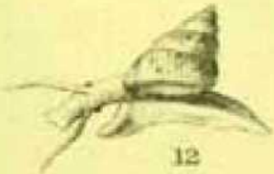
3



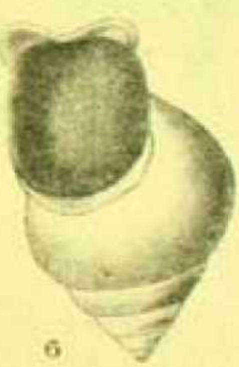
4



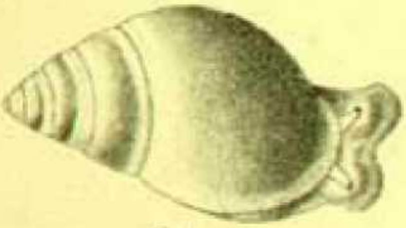
5



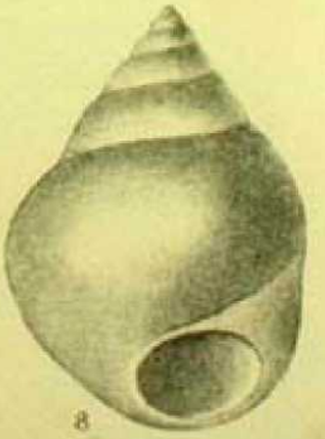
12



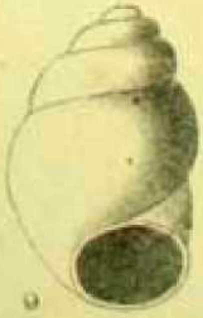
6



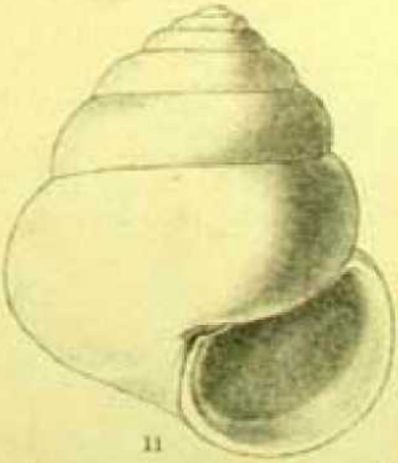
6a



8



9



11

J. Wood Mason, del

Jules Schaumburg, Litho.

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

Part II.—PHYSICAL SCIENCE.

No. IV.—1881.

XV.—*Notes on an apparently undescribed* Varanus *from Tenasserim and on other* Reptilia *and* Amphibia.—*By* W. T. Blanford, F. R. S.

[Received November 3rd;—Read December 7th, 1881.]

(With Plate XVI.)

The notes appended are on a few reptiles from very different parts of the dependencies of British India, and on a species of Pseudophidian from the Himalayas. The *Varanus* described has been in my possession for at least three years, and I hoped to identify it with some known species, but I have not succeeded in doing so.

Varanus macrolepis, sp. nov.

V. *digitis longiusculis; naribus oblongis, obliquis, ab oculis parum distantibus, subtus spectantibus; squamis nuchalibus magnis, planulatis, rotundatis; dorsalibus paullo minoribus, sed multo majoribus quam in cæteris speciebus Indicis vel Burmanis, ovatis, obtuse carinatis; corpore caudâque exempli juvenis fasciis latis nigris transversis ornatis.*

Description.—The toes are as long as in *V. dracæna* and *V. nebulosus*, the middle fore toe being considerably longer than half the distance between the eye and the end of the snout. The nostril is peculiar: it is in the anterior portion of a single large shield, and the opening is oblique, directed backwards and downwards. The nasal shield is much nearer to the eye than to the end of the snout, the distance from the latter being about twice that of the former. Tympanum rather smaller and rounder than in the allied forms, the breadth being but little inferior to the height and the diameter less than the length of the eye.

All the scales of the upper part of the body are larger than in any other Indian or Burmese form. The scales of the nape above the neck are flat, about as broad as long and much larger than those on the head. The dorsal scales are oval and bluntly keeled, nearly as long as those of the nape, but narrower, and rather larger than those of the sides. A few smaller scales are interspersed, both on the back and nape. The ventral scales are nearly or quite as broad as long, not more than half as long as the larger dorsal scales; there are about eighty scales between the gular fold and the thighs. Scales above the limbs bluntly keeled.

The scales on the top of the head are flat and do not vary much in size; those in the middle of the superciliary region are slightly enlarged, but less so than in *V. nebulosus.*

Tail very much compressed with the upper lateral scales minute, only half the length of those on the lower portion of the tail, where several longitudinal rows are larger and sharply keeled.

In the young individual examined, the colour of the body and tail consists of broad transverse alternating black and yellow bands, the black bands on the body being more than twice as broad as the intervening yellow rings, but, on the tail, the difference between the breadth of the two decreases. The black bands disappear upon the lower parts, except towards the end of the tail. There is a broad black band across the hinder parts of the neck, extending to the side in front of the shoulder, and giving out, on each side, a narrower black stripe that extends above the ear to the eye. There are three broad black bands between the shoulders and the thighs, one between the thighs, eight on the tail. None of the bands are broken up by spots or mottling on the upper parts. The limbs are blackish above with small yellow spots, yellow below with a tendency to dark transverse marks. The head and nape are uniform yellowish above; there are a few short vertical dark marks on the upper and lower labials.

The total length of the only specimen procured is 8·5 inches, of which the tail from the anus measures 4·5, head from hinder edge of tympanum to end of nose 1 inch, fore limb to end of middle toe 1·2, middle toe without claw 0·33, hind limb to end of fourth toe 1·45, fourth toe without claw, from division between third and fourth, 0·45, third from the same 0·37.

This well-marked species may be immediately distinguished from all other Indian forms by its peculiar nostril, situated in a single scale, by the larger scales on the upper part of the body, and especially by *the scales of the nape being larger than those above the head, or those on the back.* These structural differences will of course be found in adults. The colouration also is quite peculiar, but young *Varani* are very differently coloured from adults, and it is probable that the bands of colour are not persistent in older individuals.

For the only specimen of this remarkable monitor that I have seen I am indebted to Mr. W. Davison, who obtained it in Tenasserim, and, I believe, in the neighbourhood of Tavoy. The specimen was carefully labelled, but the label, being of paper, has unfortunately become detached.

There is a Philippine species of *Hydrosaurus (H. nuchalis,* Gthr. P. Z. S. 1872, p. 145) that has somewhat similar, though much smaller, scales on the nape and back, but it is of course distinguished by the form and position of the nostrils.

DRACO TÆNIOPTERUS.

In J. A. S. B., 1878, Vol. XLVII, Part 2, p. 126, I noticed some specimens from near Tavoy, collected by Mr. Davison, and expressed a slight doubt as to whether they were identical with the typical *D. tæniopterus* described by Günther from Siam (Reptiles Brit. Ind., p. 126). On comparing the Tenasserim specimens with the type in the British Museum, I find they agree very fairly. In the latter the markings on the 'wings' are more distinct and darker; to see them in the Tenasserim form the wings should be held up against the light and looked through. There is a very small tubercle behind the orbit, and the nuchal crest is too rudimentary to be of any importance.

NAJA TRIPUDIANS.

A few snakes collected by Major Biddulph in Gilgit have been presented by him to the British Museum. Amongst them are three specimens of a cobra differing in colour and to some slight extent in structure from any Indian form known to me.

Of the three specimens two measure 4 feet 5 inches each, both being of precisely the same length, and one specimen is young, being only 1 foot 9 inches long. In the two larger specimens, the colour above is uniform dark brown, below white throughout with the exception of a few irregular dusky marks on the ventral scutes chiefly anteriorly and near the tail, the subcaudals being pretty dusky. The smaller specimen is light grey above with rather faint darker cross bands, angularly bent forward in the middle of the back, and rather broader than the interspaces. The lower parts are white with the exception of two dusky bands across the throat as frequently found in Indian cobras. Neither in the adults nor in the young is there any spectacle-mark or ocellus on the back of the neck, but in the young there is a blackish spot with indistinct edges on each side of the neck where the anterior dusky band crosses the ventral shields.

In the larger specimens there are 23 to 27 longitudinal series of scales on the neck, in the smaller 25 to 27, in all 23 round the middle of the body.

The number of ventrals in the three specimens is 203, 205, and 207, there are 72 pairs of subcaudals in two and 74 in the third, the smallest individual, in which the number of ventral shields is 207. It is manifest that this variety is more elongate than the forms usually found in India and the countries to the eastward. All of the varieties of cobra described in Günther's 'Reptiles of British India' have less than 200 ventrals. The colouration too is peculiar, especially in the young specimen, and remarkably similar to that in the Central Asiatic type described by Eichwald under the name of *Tomyris oxiana.** This snake has since been shewn by Strauch,† who re-examined the original specimen, to be a true *Naja* closely allied to *N. tripudians*, but distinguished by the form of the head and the characters of the temporal shields. *N. oxiana* is founded on a young specimen, the only one hitherto recorded, 40 centimetres (15¾ inches) long, and having 202 ventrals and 66 pairs of subcaudals, so that it resembles the Gilgit snake in the great number of the former. The essential differences, however, are considered by Strauch to consist in the facts that in *N. oxiana* the length of the head is thrice the height and nearly twice the breadth in the temporal region (whereas in *N. tripudians* the length is only twice the height and one and a half times the breadth), and that there are two larger temporals in front in contact with the postoculars, the posterior temporals being numerous and scarcely larger than the back scales, whilst in the Indian cobra the temporals consist of 4 or 5 subequal shields.

Now in the Gilgit snakes the temporals vary in form. The two anterior are generally the largest, but the lower posterior temporal is nearly, sometimes quite, as large. The anterior lower temporal is in contact with 3 others. In each of the larger specimens 3 temporals are in contact with each occipital, in the smaller 4. I find precisely similar temporal shields in many Indian cobras in the British Museum. The head too in the Gilgit snakes is precisely similar in form to that of *N. tripudians.*

If, therefore, Strauch is correct in considering the distinctions he has pointed out in the type of *N. oxiana* of specific value, it is clear that the Gilgit snakes cannot be referred to that species. The temporals are so variable in form and number in cobras that, were there no other distinction, I should doubt whether the Central Asiatic form really deserved separation, but the shape of the head is a more important character. At the same time it is very interesting to find in Gilgit, where several birds and mammals belonging to Central Asiatic types occur, a cobra presenting so remarkable a similarity in colour and structure to the form described from Central Asia.

* Zool. Spec., III, p. 171: Fauna Casp. Cauc. p. 130, pl. xx.

† Bull. Acad. Sci. St. Pet. 1868, xiii, p. 81.

ICHTHYOPHIS GLUTINOSUS.

Peters, in his recent monograph* of the Cæcilians, gives as localities for this species (the *Epicrium glutinosum* of Günther's 'Reptiles of British India,' p. 441,) Ceylon, Siam, and Java, and, on Günther's authority, South India, Khasi hills, and Tenasserim. So far as I am aware, no Pseudophidian has hitherto been recorded from the Himalayas.

I received four or five years since, from the late Mr. Mandelli, two specimens of this species, obtained near Darjiling, and I find, in the British Museum, two more from the same locality, procured by Dr. Jerdon. In both my specimens, and in one of Dr. Jerdon's, the lateral band is wanting, but there is no structural difference from other specimens.

XVI.—*Second List of Rhopalocerous* Lepidoptera *from Port Blair, Andaman Islands, with Descriptions of, and Notes on, new and little-known Species and Varieties.—By* J. WOOD-MASON, *Deputy Superintendent, Indian Museum, Calcutta, and* LIONEL DE NICE'VILLE.

[Received July 26th;—Read August 3rd, 1881.]

(With Plate XIV.)

At the end of 1880, we contributed to this Journal an account of the Rhopalocerous portion of the collection of Lepidopterous insects formed during that year for the Indian Museum by Mr. F. A. de Roepstorff, an Assistant Superintendent on the Port Blair Establishment, to whose energetic labours zoologists are almost entirely indebted for such knowledge as they possess of the interesting Lepidopterous fauna of the Andaman Islands, for by far the greater number of the specimens belonging to both divisions of the order reported upon in 1877 by Mr. F. Moore was also collected by this officer. The collection sent to us in 1880 by Mr. de Roepstorff comprised no less than 90 distinct species, of which 25 had not been previously recorded. The present list is based upon a very fine collection (numbering more than 1000 specimens in the finest condition, and especially valuable as furnishing us with the opposite sexes of most of the species) sent to the Museum in instalments during the current year by the same assiduous collector, and it adds 22 fresh species to the fauna. In order to render it a record complete to the end of the year 1881 of the species of butterflies inhabiting the Andaman Islands, several corrections have been made in the paper since it was read, and a few additional species, together with the names of the few forms which have been recorded by Mr. Moore but not seen by ourselves, inserted with an asterisk prefixed to each of the latter to distinguish them from those of which we have received examples.

---

* Monatsbericht Ak. Wiss. Berlin, 1879, p. 931.

LEPIDOPTERA RHOPALOCERA.

Family NYMPHALIDÆ.

Subfamily Danainæ.

1. Hestia cadelli.

H. cadelli, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1880, vol. xlix, pt. ii, p. 225, pl., xiii, fig. 1 ♂.

Since our first paper was published, we have received numerous specimens of both sexes of this species from South Andaman from Mr. de Roepstorff.

♀. All the wings broader, with the markings of the same shape, situation, size, and shade as in the male, from which, in fact, the female differs in the proportions of the organs of flight just in the same manner as does *H. hadeni* ♀ from *H. cadelli* ♂ (*vide* J. A. S. B., 1880, Pl. XIII).

*2. Hestia agamarschana,† Felder.

Andaman Islands (*Felder*).

3. Danais melanoleuca, Moore.

4. Euplœa core, Cramer.

We have received no specimens of this common species since 1872, when the native collector Moti Ram forwarded a single example from Port Blair.

5. Euplœa andamanensis, Atk.

Subfamily Satyrinæ.

6. Lethe europa, Fabr.

7. Melanitis leda, Linn.

8. Melanitis ismene, Cramer.

9. Melanitis zitenius.

Pap. zitenius, Herbst, Natur. Syst. Ins. Schmett. viii Theil, p. 5, pl. 182, figs. 1, 2.

The single male received from Mr. de Roepstorff has the round black spot on the yellow-red band of the anterior wings divided longitudinally into two parts by the yellow of the band, and the white pupil obsolete. In other respects, especially in its less falcate anterior wings, it agrees best with specimens in the Museum from Upper Tenasserim.

10. Mycalesis (Calysisme) perseus, Fabr.

11. Mycalesis (Calysisme) drusia, Cramer.

12. Mycalesis (Virapa) radza, Moore.

---

† ? 'agamarsena' from ἄγαμος, 'unmarried,' and ἄρσην-ἄρσενος, 'male,' in allusion to the fact that the describer was ignorant of the opposite (female) sex.

13. ELYMNIAS COTTONIS, Hewitson.

Hewitson states that the sexes are alike in this species, but the three females before us have the outer margins of all the wings lighter with a more or less distinct submarginal rounded-angulate macular band in the anterior ones corresponding to the band of blue spots in the males of *E. undularis*, and in two specimens two, and in the other four, distinct whitey-brown spots, the blurred pupils of the obsolete ocelli of the underside showing through, on the upperside of the posterior wings; below, they are much lighter than the males, the subapical triangular patch of lilacine ground-colour in the anterior wings and the submarginal lilacine ground of both wings, but especially in the posterior pair, being whiter and consequently more distinct than in the male; there are also six pupils of ocelli instead of one distinctly traceable, and the anastamozing chestnut striation besides being lighter is less confluent. The females, in fact, much resemble the males of *E. undularis.* Hewitson makes no mention of the beautiful rich deep plum-colour which suffuses the dark parts of the upperside in both sexes almost equally, nor of the faint red-violet reflections emitted by the light borders.

Danais plexippus, the model of the females of the allied continental form, has not yet been detected at Port Blair.

Subfamily MORPHINÆ.

14. AMATHUSIA PHIDIPPUS, Linn.

Two males and one female.

15. DISCOPHORA CELINDE, Stoll.

Two males.

Subfamily NYMPHALINÆ.

16. CETHOSIA NIKOBARICA, Felder.

17. ATELLA ALCIPPE, Cramer.

*18. CIRRHOCHROA ANJIRA, Moore.

19. CIRRHOCHROA THAIS, Fabr.

20. CYNTHIA EROTA, Fabr.

21. MESSARAS ERYMANTHIS, var. NIKOBARICA, Felder.

22. PYRAMEIS CARDUI, Linn.

23. JUNONIA ŒNONE, Linn.

24. JUNONIA ASTERIE, Linn.

25. JUNONIA ALMANA, Linn.

26. DOLESCHALLIA BISALTIDE, Cr.

27. KALLIMA ALBOFASCIATA, Moore.

The underside is, as might have been expected, excessively variable.

28. EURYTELA HORSFIELDII, Boisduval.

A single specimen of the very differently coloured female.

29. CYRESTIS COCLES, var. ANDAMANICA, nov.

Our single male differs from a continental (Sylhet) one in the Museum collection only in its larger size, whiter ground-colour throwing up the slightly darker markings, in the finer and rather indistinct submarginal black lines of all its wings on the upperside, and in the more distinct ochraceous-fuscous markings of the underside.

Mr. Hewitson, we find, referred a series of specimens of a *Cyrestis* from the Andamans to this species, and he justly said of them that for delicacy of colouring they were some of the most beautiful things he had ever seen.

30. CYRESTIS FORMOSA, Felder.

Cyrestis formosa, Felder, Reise Novara, Lep. vol. iii, p. 412, ♂.
——— *horatius*, W.-M. & de N., Proc. As. Soc. Bengal 1881, August, p. 142.

♂. Allied to *C. cocles*, with which it agrees almost exactly in the character of the markings of the upperside, but from which it differs in its pure white ground-colour painted with different shades of sepia-brown instead of pale ochraceous and ochraceous-fuscous and black, the black marks of *C. cocles* being represented by the darkest of the sepia colouring, in its larger and more distinct ocelli, and in having a distinct but pale fulvous patch at the anal angle of the posterior wing; and, on the underside, in having only the lightest portions of the sepia markings absent and replaced by white or whitish.

Length of anterior wing 1·16; whence expanse = 2·4 inches.

Nine specimens exactly alike from S. Andaman.

We have since received a tattered male specimen from Khurda, a place 25 miles S. S. W. of Cuttack, the chief town of Orissa, in Continental India.

31. CYRESTIS THYODAMAS, var. ANDAMANICA, nov.

We entered the name of this species in our previous list without remark because we had at the time but a single specimen before us and the characters which distinguish it from the typical continental form might have proved to be inconstant. We have since received a very large series of specimens of the male all agreeing perfectly with one another and differing from all continental (from Kulu to Upper Tenasserim) ones in the blacker apex and outer margin, in the prominent somewhat diffused black spot on the third median veinlet between the third and fourth common black strigæ at the point where these bend towards each other in the anterior wing; and in having the fulvous marks of the anal half of the abdominal margin, of the anal angle, and of the outer margin as far as the discoidal vein, of the posterior wing, much diffused and darker;—in having, in fact, all the markings and colouring darker and coarser both above and below.

32. HYPOLIMNAS BOLINA, Linn.

33. HERONA ANDAMANA, Moore.

34. PARTHENOS GAMBRISIUS, Fabr.

35. LIMENITIS PROCRIS, var. ANARTA.

36. NEPTIS CNACALIS, Hewitson.

One male and two females.

37. NEPTIS JUMBA.

N. jumba, Moore, Cat. Lep. E. I. Co. 1857, vol. i, p. 167, pl. 4*a*, fig. 5; Proc. Zool. Soc. Lond. 1858, p. 7.

A male and a female from S. Andaman.

38. NEPTIS MANANDA, Moore.

39. NEPTIS ANDAMANA, Moore.

40. ATHYMA RETA.

Athyma reta, Moore, Proc. Zool. Soc. Lond. 1858, p. 12, pl. 50, fig. 3 ♂, from Sumatra.

Athyma selenophora, Kollar, Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1880, vol. xlix, pt. ii, p. 229, ♀.

♀. Anterior wings above with the divided cellular mark, the triangular spot beyond this, a subapical largish spot, and a much smaller one just in front of the second median veinlet in the discal series, orange, and with the curved series of six discal spots white, diffusedly bordered, from the costal margin increasingly and afterwards decreasingly to the inner margin, with orange.

Posterior wings with the discal band white decreasingly from the anterior margin narrowly edged externally with orange, and with the submarginal sinuous band narrower, broken up into lunules, and orange-coloured.

Length of anterior wing 1·44; whence expanse = 3·04 inches.

41. TANAECIA CIBARITIS, Hewitson.

42. ADOLIAS ACONTIUS.

Adolias acontius, Hewitson, Ann. and Mag. Nat. Hist. 1874, ser. 4, vol. xiv, p. 358; Exot. Butt. vol. v, *Adolias*, pl. iv, fig. 11, ♀.

Tanaëcia acontius, Moore, Proc. Zool. Soc. Lond. 1877, p. 586.—Wood-Mason and de Nicéville, Journ. As. Soc. Bengal, 1880, p. 229, ♀.

♂. Wings above almost black, the ground-colour being very dark brown of a bronzy tint, and the prominent cellular and basal marks, the outer margins, and the common discal and submarginal submacular bands velvety black, the former of the two last-named bounded externally at its anterior end by a series of four indistinct U-shaped white marks, and the latter provided at its inner and anterior extremity with two small elongated subcostal white spots (the posterior of which is the larger), and, in the posterior wings, composed of distinct subelongate spots each with an inconspicuous dash paler than the surrounding ground-colour at either end. The posterior wings strongly glossed with dark greenish-purple anteriorly.

Wings below much as in **A.** *garuda*, but all more strongly glossed with amethyst-purple submarginally and having their basal half coloured greyish-green and conspicuously marked with black as in the female.

Length of anterior wing 1·28; whence expanse = 2·72 inches.

The characters of the venation and the structure of the palpi remove this species from the genus *Tanaëcia*, in which it has been placed by Moore, to *Adolias*, whilst the form and colouration of the wings in the male assign it a position in the system next to, or in the immediate neighbourhood of, *A. garuda*, of which, indeed, the above described insect might, on a cursory view of the upperside, be mistaken for a black local race.

43. Symphædra teuta, var. teutoides.

44. Nymphalis athamas, Drury.

Family ERYCINIDÆ.

*45. Abisara kausambi, Felder.

46. Abisara bifasciata, Moore.

Our specimens of the female all agree with Moore's figure of the upperside, but they all have three anterior ocelli on the underside of the posterior wing; the front one, however, reduced to an almost rudimentary condition.

Our numerous males all have the discal light bands of the anterior wing less bent than in the females, but all except two (which have a rudiment of the foremost one) present only two ocelli in the anterior series; and our unique Nicobarese specimen agrees with them except in having the discal band if anything a little more angled.

It is probable that the two foregoing species will prove to be identical.

Family LYCÆNIDÆ.

47. Curetis thetys, var. saronis.

48. Pithecops hylax, Fabr.

49. Castalius ethion, Hewitson.

Four males and a female from S. Andaman.

50. Castalius elna, Hewitson.

Three males and a female from S. Andaman, variable in the size and connections of the black spots and bands of the underside and wanting the minute black spot at the anterior end of the common white band of the upperside.

51. Castalius roxus, Horsfield.

Three males and two females.

52. Lampides ælianus, Fabr.

53. Lampides strabo (Fabr.), Butler.

A single male from S. Andaman.

*54. LAMPIDES KONDULANA, Felder.

55. LAMPIDES MALAYA.

Lycæna malaya, Horsfield, Cat. Lep. E. I. Co. 1829, p. 70.

One specimen from S. Andaman.

56. LAMPIDES ARDATES, Moore.

57. LAMPIDES ELPIS, Godart.

58. LAMPIDES PANDAVA, Horsfield.

59. LAMPIDES confer PACTOLUS.

60. LAMPIDES PLUMBEOMICANS, W.-M. & de N.

61. POLYOMMATUS SANGRA, Moore.

62. APHNÆUS LOHITA, var. ZOILUS.

63. HYPOLYCÆNA ERYLUS, Godart.

*64. HYPOLYCÆNA ELTOLA, Hewitson.

65. SITHON SUGRIVA, var. ARECA, W.-M. & de N.

Six more males and two females.

66. 'SITHON' WESTERMANNII, var. ANDAMANICA, nov.

Another male.

67. 'SITHON' TARPINA, Hewitson.

Three more males and two females.

68. 'SITHON' ALBIMACULA, n. sp.

♂. Anterior wings above brown-black of a vinous tint with a large conspicuous oval white discal spot equal in length to half the breadth of the part of the organ on which it lies, equally distant from the opposite margins, and so placed that its major axis and more pointed anterior end are directed towards the middle of the costa.

Posterior wings above dark violet-blue bordered increasingly from the base of the anterior margin to the apical angle and thence decreasingly to the anal angle with fuscous-black and from the submedian vein to the abdominal margin with greyish-black; with a fine black anteciliary line and, immediately internal to this, a very faint and fine silver-grey line decreasing from the anal angle and dwindling to nothing before reaching the apical angle; with the cilia dark brown evenly tipped with silvery white; and with the tails black-brown, the unequal submedian and second median shorter ones edged internally with silvery white cilia, and the longer intermediate first median one white-tufted at its inner extremity.

Wings below much lighter.

Anterior pair with a broad and prominent white band bordered both sides with fuscous of a darker shade than the rest of the ground-colour, passing off from the greyish-white basal portion of the sutural area across the organ to within a short distance of the costa, increasing in its course to a little beyond the first branch of the median vein and thence decreasing to its anterior extremity (which is washed with fuscous), so that its outline, while almost straight internally, is bluntly obtuse-angled externally; and with the outer margin at the inner angle obsoletely trilineated with white as in the posterior pair.

Posterior pair with a narrower and less conspicuous discal whitish band of uniform width throughout, not sharply defined, but on the contrary diffused externally, and bordered internally with a line of fuscous which is darker than the ground, sharply bent inwards at right angles to itself to the abdominal margin, and externally margined with brassy, at its posterior end; with the deep black spot of the small anal lobe, a large patch of grey scales between the ends of the submedian vein and the first median veinlet, an intense black spot next to and about half the size of this between the ends of the first and second median veinlets, and a very short and transversely elongated or narrow similar but inconspicuous black spot between the ends of the first and second median veinlets, all internally margined with a discontinuous line of brassy scales which extends from the point where the dark discal striga with its brassy edging reaches the abdominal margin all along the outer margin of the organs, following the inner contours of the above-described spots, up to the second subcostal veinlet; and with the external margin finely lineated with three regularly concentric silvery white lines separated from one another by the black anteciliary line and the brown bases of the cilia.

Length of the anterior wing ·52; whence expanse = 1·09 inches.

A single male of this beautiful little species, the nearest ally of which is *M. ciniata*, Hewitson, Ill. Diurn. Lep. p. 35, pl. XIV, figs. 30, 31 ♀.

69. DEUDORIX EPIJARBAS, Moore.

70. DEUDORIX DIENECES, Hewitson.

71. DEUDORIX VARUNA, Horsfield.

72. DEUDORIX ORSEIS, Hewitson.

73. MYRINA ATYMNUS, var. PRABHA.

74. AMBLYPODIA NARADA, var. ERICHSONII.

A single male with the upperside coloured the deepest and richest metallic violet bordered with fuscous-black exactly to the same extent and in just the same manner as, but more darkly than, in Calcutta specimens of *A. narada*. One of the females in the tint and extent of the blue of the upperside closely resembles Calcutta specimens of *A. narada*, but it is otherwise darkly and richly coloured as in the rest of the Andaman specimens.

75. ARRHOPALA CENTAURUS, var. CORUSCANS, W.-M. & de N.

Numerous additional males and females.

76. ARRHOPALA AMANTES.

Amblypodia amantes, Hewitson, Cat. Lyc. Brit. Mus. 1862, p. 4, pl. 2, figs. 1-3.

One small female.

*77. ARRHOPALA NAKULA, Felder.

78. NARATHURA FULLA, var. ANDAMANICA, nov.

Amblypodia fulla, Hewitson, Cat. Lyc. Brit. Mus. 1862, p. 10, pl. vi, figs. 67, 68 ♂, from Boirou.

Narathura fulla, var. *andamanica*, Wood-Mason and de Nicéville, Proc. As. Soc. Bengal, August, 1881, p. 143.

Narathura subfasciata, Moore, Trans. Entom. Soc. Lond. 1881, September, part iii, p. 312, ♂ ♀, from the Andamans.

♂. Wings above brilliant violet-cyaneous, all slightly more broadly bordered with black-fuscous than in Hewitson's figure of the typical form.

Wings below pale ocraceous-fuscous, with faint traces of a discocellular mark in both wings and of three or four basal spots in the posterior wings, besides the markings beyond the middle of the wings, darker than the ground-colour.

The end of the first submedian branch of the posterior wing forms a minute tooth on the outer margin.

This very slight variety seems intermediate between *N. fulla*, Hewitson, from Boirou, and *N. arsenius*, Felder, from Luzon.

Mr. Moore compares his species to *Amblypodia canuta*, Hewitson, a name which we have failed to trace.

79. SURENDRA QUERCETORUM, var. LATIMARGO.

*80. AMBLYPODIA ZETA, Moore.

Family PAPILIONIDÆ.

Subfamily PIERINÆ.

81. TERIAS HECABE, Linn.

82. TERIAS HARINA, Horsfield.

*83. TERIAS NIKOBARIENSIS, Felder.

We have received specimens from the Nicobars (*vide supra* p. 236), but none as yet from the Andamans.

*84. HEBOMOIA GLAUCIPPE, Linn.

85. HEBOMOIA ROEPSTORFFII, W.-M. Pl. XIV, Figs. 3 & 4 ♂, 5 ♀.

Since this species was described, we have received a very large series of both sexes.

86. IXIAS ANDAMANA, Moore.

87. CATOPSILIA CATILLA (Cramer), Butler.

One male only.

88. CATOPSILIA CROCALE, Cramer.

Two males with the apex of the anterior wings slightly more broadly bordered with black than in Butler's fig. 1, pl. ix, Lep. Exot., and two others approaching very closely his fig. 4, representing *C. flava*, but with the apex of the anterior wings equally broadly black-bordered with the two former, and the outer portion of all the wings, especially of the posterior ones, paler than the basal. Also two females.

*89. CATOPSILIA CHRYSEIS, Drury.

90. PIERIS NADINA, var. NAMA.

91. PIERIS CORONIS, var. LICHENOSA.

92. ERONIA VALERIA, var. NARAKA.

93. TACHYRIS PAULINA, Cramer.

Subfamily PAPILIONINÆ.

94. ORNITHOPTERA POMPEUS (? *rectius* HELIACON).

Mr. Moore does not inform us, and we have not succeeded in discovering, in what points his *Orn. heli[a]conoides* differs from the *Orn. pompeus* of Sikkim and Assam.

In one of our four males from Port Blair all the submarginal black spots of the posterior wings are wanting except the first or anal, which is fused with the marginal conical spot as it all but invariably is in Continental specimens; in another the second spot is present on the upperside only; in a third, the second and third, and in a fourth, the second, third, and sixth, while in the feminine male upon which Mr. Moore founded his *Orn. heliaconoides* the second, third, fifth, and sixth are present on both sides: all of which variations are to be met with in a sufficiently large series of Continental specimens, particularly in our own fine one from the Sikkim and Khasi Hills.

Of our five females two have the anterior wings conspicuously rayed with white like some Assam specimens, and three (two from the Little Brother Island and one from S. Andaman) have the veins of these wings either simply bordered both sides with paler black than the general ground-colour or only exhibit here and there faint traces of white scales like others from the southern slopes of the Khasi Hills (Sylhet).

The males which are least differentiated from the females in point of markings, also resemble them in the fuller and more broadly rounded inner angle of their anterior wings.

95. PAPILIO MAYO.

P. mayo, Atkinson, Proc. Zool. Soc. Lond. 1873, p. 736, pl. 63, fig. 1, ♂

P. charicles, Hewitson, Ann. and Mag. Nat. Hist. 1874, ser. 4, vol. xiv, p. 356, ♀; Exot. Butt. 1875, vol. v, pl. xiv, Pap. fig. 45, ♀.

The shape of the wings and the presence of red markings on the underside of the hinder pair prove that *P. mayo* is more closely allied to *P. androgeus* than to *P. polymnestor*; not a single red scale being to be detected in the hind wing of the latter except at the base of the organ, and the conspicuous blue-grey band on the upperside of the former being nothing more than an excessive development and concentration of the radiating lines of grey scales with which *P. androgeus* is more or less conspicuously ornamented between the veins and folds of all its wings, but especially of the posterior pair, on the upperside. *P. mayo* is also adorned in the anterior wings with radiating shorter lines of luteous grey scales, a point not mentioned by Atkinson nor represented by him in his figure.

It is a well-known fact that the Continental *P. androgeus* is provided with three different forms of female, two tailless like the male and one tailed, which mimicks the red-spotted *P. doubledayi* just as the corresponding female of the closely allied *P. memnon* does the yellow-spotted *P. coon.* The two rare tailless females of its Andaman representative have not yet been detected; but there is no doubt whatever that in the *P. charicles* of Hewitson we have the commoner tailed form, which mimicks the red-tailed *P. rhodifer.* Our first specimens of the supposed two species were captured by the native collector Moti Ram in 1872 all together in the same spot; and all the numerous specimens (upwards of fifty in number) of *P. mayo* which have passed through our hands during the past two years are males, and all the (some 6 to 8) *P. charicles* females.

From these facts we can come to no other conclusion than that the two are the opposite sexes of one and the same species, and we accordingly unite them under the former as being the prior of these two names.

96. PAPILIO POLYTES, var. NIKOBARUS, Felder.

97. PAPILIO AGAMEMNON, Linn.

98. PAPILIO EURYPYLUS, Linn.

99. PAPILIO RHODIFER, Butler.

♀. Differs from the male in having all its wings broader, and the crimson of the posterior ones not quite so bright.

100. PAPILIO CLYTIA, var. FLAVOLIMBATUS. Pl. XIV, Fig. 1, 2, ♂.

We have since received many males and a female, the former all quite constant, and the latter differing from them only in its broader wings and in the paler fulvous markings of both sides of the posterior ones.

*101. PAPILIO ANTIPHATES, Cramer.

102. PAPILIO LÆSTRYGONUM, W.-M.

♀. Wings all lighter above in consequence partly of their greater breadth, partly of the bands and other black markings being narrower or less developed, and partly of the smaller extent of grey present on the posterior pair: the fifth forked black band not reaching the inner angle on either side and none of the bands of the anterior pair being connected by a black edging at the inner margin, and the two marginal and sub-marginal lunular bands of the posterior pair being smaller and less diffused and more distinctly divided from one another by light scales anteriorly on the upperside.

Length of anterior wing 1·8; whence expanse = 3·75 inches.

A single specimen.

103. PAPILIO PREXASPES.

P. prexaspes, Felder, Reise Novara, Lep. vol. i, p. 107, pl. xv, fig. *d*, ♂, from Malacca.—Oberthür, E'tudes D'Entom. ivme livr. p. 46, ♂ ♀, from the Andaman Isles.

♀. Wings above lighter and dingier, much in fact, as in *P. chaon*, Westw., with the fascia of the underside of the anterior ones faintly indicated.

Anterior wings below with an incurved ashy-white fascia beyond the end of the cell, commencing near the costal margin, interrupted by the veins and folds, and rapidly decreasing to the third median veinlet, where it ends to recommence at the first, whence it increases to the submedian vein.

Tails of the posterior wings broader at the expanded extremity and narrower at the constricted portion, just as in *P. chaon* ♀ as compared with its males.

Length of anterior wing 2·35; whence expanse = 4·86 inches.

Seven males and two females.

Family HESPERIDÆ.

104. ISMENE CHROMUS, Cramer.

Andaman females all have only a single small semitransparent subapical speck between the last two branches of the subcostal of the anterior wing; but those from Continental India have sometimes one and sometimes two besides this on the disk of the same wing, which in one from Bangalore in South India are enlarged into two conspicuous reversed comma-shaped spots.

105. ISMENE MALAYANA, Felder.

The females have a small semitransparent yellowish discal speck between the two posterior branches of the median vein and of course lack the oblique band of short lines of modified scales seen in the males of this as well as of the preceding closely-allied species.

106. ISMENE ARIA, Moore.

107. ISMENE LEBADEA, var. ANDAMANICA, nov.

♂. Wings above dark brown of a slightly greenish tinge, all without spots.

Anterior wings bearing a huge and dense pear-shaped sericeous patch of setæ glossed with greyish-greenish and extending nearly from the bottom of the angle formed at the base of the organ by the subcostal and submedian veins about to the level of the end of the fourth fifth of the length of the latter vein, with all the setæ directed backwards and slightly outwards; with the costal margin purplish; the outer portion beyond the setulose patch bronzy; and the cilia pale luteous.

Posterior wings purple-glossed, with two subparallel raised discal longitudinal lines of modified scales attached to the apparently thickened bases of the first and second median veinlets, and with the cilia pale orange.

Anterior wings below bronzy-brown with a patch of brilliant amethyst-purple sparsely irrorated with white scales and extending from the end of the cell nearly to the apex of each organ, and with the basal portion of the wing-membrane behind the median vein and its first branch whitey-brown passing to ashy posteriorly, and with a tuft of brown-tipped yellow setæ arranged longitudinally upon and on each side of the basal half of the submedian vein.

Posterior wings below purple-glossed, darkest over the scent-glands, with an interrupted transverse discal band of white scales from near the abdominal margin to the middle of the organs, where it diffuses itself widely over a diffused patch of amethyst-purple.

♀. All the wings above and below paler and duller and glossed with purple, the anterior ones spotted.

Anterior wings suffused with purple on the disk, which bears three semitransparent yellow lustrous spots of the same size, relative proportions, and shape as in *C. attina*, Hew., with a fourth smaller and elongate yellow opaque spot placed just in front of the submedian vein rather beyond the middle of the organs.

♂. ♀. Eyes blood-red.

Antennæ purplish brown with the club bright luteous below.

Length of anterior wing ♂ 1·25, ♀ 1·25; whence expanse = ♂ 2·65, ♀ 2·65 inches.

The patch of setæ on the upperside of the anterior wings, the yellow tuft (which probably serves as a scent-fan) on the underside of the same wings, and the lines of modified scales (which probably cover the scent-glands as they seem soiled as if by some exuding fluid) on the upperside of the posterior wings are structures peculiar to the male sex.

108. Ismene druna, Moore.

♀. Differs from the male only in the absence of the sexual streak in the anterior wings.

In both sexes of this species the anterior wings are tipped with paler on both sides.

109. Ismene exclamationis.

Hesp. exclamationis (Fabr.), Butler, Cat. Diurn. Lep. Fabr. 1870, p. 269, pl. iii, fig. 2.

Numerous males and females.

110. Ismene harisa.

I. harisa, Moore, Proc. Zool. Soc. Lond. 1865, p. 782, ♂ ♀.

A single female.

111. ISMENE BADRA.

Gonilobа badra, Moore, Proc. Zool. Soc. Lond. p. 778, ♂ ♀.

A single female in very fine condition.

112. TAGIADES ALICA, Moore.

Numerous specimens of both sexes.

113. TAGIADES RAVI, Moore.

114. TAGIADES MENAKA.

Pterygospidea menaka, Moore, Proc. Zool. Lond. 1865, p. 778, ♂ ♀, from 'N. E. Bengal.'

Male and female.

115. TAGIADES BHAGAVA, var. ANDAMANICA, nov. Pl. IV, Fig. 5, ♂.

Satarupa bhagava, Moore, Proc. Zool. Soc. Lond. 1865, p. 781, ♂, from 'N. E. Bengal.'

Numerous males and a female from S. Andaman.

♂. With the cream-coloured subbasal band of the posterior wings in one specimen narrower and not continued on to the anterior wings, in another as broad as in an Upper Tenasserim example, and continued faintly on to the anterior wings; with the spot at the end of the cell larger than in the female and not isolated from the fuscous outer margin; and with the transverse abdominal band concolorous with the subbasal.

♀. Wings above paler, with the spots of the anterior wings whiter and larger, and the band of the posterior ones pure white, much broader, and extending on to the anterior ones broadly up to the submedian vein and thence narrowly up to the first median veinlet between the two pairs of black spots.

Posterior wings with a black speck at the end of the cell on a white ground on both sides, and the two anterior of the semicircular series of black spots on the upperside nearly, but on the underside wholly, placed on the white subbasal band.

A specimen from the Sikkim Hills, 3000 feet, differs in having the band broader both on the posterior wings and between the two pairs of spots in the anterior ones.

116. PLESIONEURA ALYSOS, Moore.

Our specimens from S. Andaman, the Sikkim Hills, and the N. E. Frontier districts (Sibsagar, etc.,) all agree with one another in always having three conjugated obliquely placed subapical semitransparent spots and usually three in the reversed oblique series, the innermost of which is separated from the next to it by a greater interval than this is from the outermost, which latter is the absent one in those specimens with only two in the series.

Males and females.

117. PLESIONEURA PARALYSOS, n. sp.

Proc. As. Soc. Bengal, August 1881, p. 143.

♂. ♀. Closely allied to *P. alysos*, but differing therefrom, on the upperside of the anterior wings, in the discal oblique semitransparent white lustrous band being broader with less irregular margins, and in only one small spot, placed between the third median and the discoidal veinlet, midway between the discal band and the outer margin, being present; and, on the underside of the posterior pair, in having one or two small white opaque lustrous spots, one near the end of the cell, the larger and the more constantly present, and the other just beyond it between the first and second median veinlets.

Three males and one female.

Length of anterior wing ♂ ·78, ♀ ·82; whence expanse = ♂ 1·66, ♀ 1·74 inches.

Specimens from the Sikkim Hills; Sibsagar (*S. E. Peal*), Dhunsiri valley and Dafla Hills, Assam (*H. H. Godwin-Austen*); Trevandrum, S. India (*F. W. Bourdillon*), and Ceylon (*F. R. Mackwood*) are devoid of all traces of the spots on the lower surface of the posterior wings.

118. PLESIONEURA DAN, var. ANDAMANICA, nov.

Pap. dan, Fabr., Mant. Ins. ii, p. 88; *Hesperia fatih*, Kollar in Hügel's Kaschmir, vol. iv, pl. 18, figs. 5, 6.—*Plesioneura dan*, Moore, Proc. Zool. Soc. Lond. 1865, p. 789.

Our specimens from Port Blair differ from Continental ones in having the discal series of spots all run together so as to form an unbroken band, and the three subapical spots conjugated and in the same straight line, with their conjoined inner margin nearly straight and their outer festooned; and two examples exhibit in addition two smaller dots placed nearly parallel to the outer margin just below and external to the three subapical ones.

Numerous specimens.

119. PLESIONEURA LEUCOCERA.

Hesperia leucocera, Kollar in Hügel's Kaschmir, 1848, vol. iv, p. 454, pl. xviii, figs. 3, 4.

Plesioneura sumitra, Moore, Proc. Zool. Soc. Lond. 1865, p. 787, from N. E. Bengal.
——— *pulomaya*, Id., loc. cit. p. 787, from 'Darjeeling'.
——— *ambareesa*, Id., loc. cit. p. 788, from Maungbhoom, Bengal.
——— *chamunda*, Id., loc. cit. p. 788, from Bengal.
——— *putra*, Id., loc. cit. p. 788, from Bengal.

Our large series of specimens from the Sikkim Hills, Cherrapunji in the Khasi Hills, the N. W. Himalayas, Travancore, Ceylon, and S. Andaman furnishes us with an almost complete series of gradations between those with the smallest number and the greatest amount of coalescence and those presenting the largest number and the least coalescence of the spots on the disk of the anterior wings; moreover, the orange spots in the posterior wings are to the last degree capricious in their development, being exceedingly prominent in some and totally wanting in others; not a single character, in fact, which we have chosen in our attempts to divide our series into local races has proved to be constant.

120. PLESIONEURA PRABA.

P. praba, Moore, Proc. Zool. Soc. Lond. 1865, p. 790, ♂ ♀.

Three males from S. Andaman.

121. HESPERIA CAHIRA, Moore.

The three females have, in addition to the eight spots present in males, a more or less well-developed triangular bright yellow opaque one touching the submedian rather beyond the middle of this, and appearing on the undersides as an imperfect band between that vein and the first median veinlet; and, moreover, have the whole underside thickly and evenly clothed with rufous-brown scales.

122. HESPERIA OCEIA, Hewitson.

♂. Wings above rich dark purple-brown with bronzy reflections.

Anterior wings typically with eight semitransparent pale yellow lustrous spots, namely, two, dot-like, at the end of the cell, of which the posterior is the larger, a third subquadrate, the largest of all, between the first and second median veinlets, a fourth, about half the size, between the second and third median veinlets, with a dot, the fifth, beyond and in front of it, and a series of three dots, the sixth, seventh, and eighth, in a series, in front of this again.

Posterior wings each with a conspicuous tuft of long dark brown pale-based setæ inserted into the wing membrane immediately behind the base of the subcostal trunk.

Wings below lighter and duller.

Anterior wings with a huge oval ashy patch of a most brilliant satiny lustre, occupying the middle four fifths of the portion of the organs between the median vein and the posterior margin, and in the middle of which is so placed as to be divided by the submedian vein a very much smaller oval patch of brown modified scales.

♀. Wings above paler and scarcely at all suffused with purple, with the setæ olive-green and the cilia pale luteous.

Anterior pair all but invariably with nine spots, an additional opaque one being present just in front of the submedian vein a little beyond the middle of the organs.

Wings below pure dead uniform olive-brown.

Length of anterior wing ♂ ·74, ♀ ·86; whence expanse = ♂ 1·63, ♀ 1·88 inches.

In the male of this species the basal tuft on the upperside of the posterior wings probably serves as the scent-fan, while the patch of modified scales on the underside of the anterior ones covers, and collects sponge-like the odorous fluid secreted by, subjacent glands.

Obs. The female has been described by Mr. Moore as that of his *H. cahira* (*vide supra*).

The male varies considerably in the number of spots in the anterior wings, while the female is almost constant. These variations may most conveniently be exhibited in such a formula as the following, in which the numerals 1, 2, 3, 4, 5, 6, 7, and 8 stand for the semicircular series of eight discal spots seen in typical examples numbered in the order of their succession from before backwards *inwards* and forwards, the cypher (0) wherever it occurs indicating that that particular spot the place of whose number it occupies is absent, and *x* representing the submedian additional spot all but invariably present in females only :—

$$\left.\begin{array}{l} \text{♂.}\ 1+2+3+4+5+6+7+8 \\ \text{♂.}\ 1+2+3+4+5+6+7+8 \\ \text{♂.}\ 1+2+3+4+5+6+7+8 \\ \text{♂.}\ 1+2+3+4+5+6+7+8 \\ \text{♂.}\ 1+2+3+4+5+6+7+8 \end{array}\right\}\text{Typical.}$$

$$\begin{array}{l} \text{♂.}\ 0+2+3+0+5+6+7+0 \\ \text{♂.}\ 0+2+3+4+5+6+7+8 \\ \text{♂.}\ 0+2+3+0+5+6+7+0 \\ \text{♂.}\ 0+2+3+0+5+6+7+8 \\ \text{♂.}\ 0+2+3+0+5+6+7+8 \\ \text{♂.}\ 0+2+3+0+5+6+7+8 \\ \text{♂.}\ 0+2+3+0+5+6+7+8 \\ \text{♂.}\ 0+2+3+0+5+6+7+8 \\ \text{♂.}\ 0+0+3+0+5+6+7+0 \end{array}$$

$$\left.\begin{array}{l} \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \\ \text{♀.}\ 1+2+3+4+5+6+7+8+x \end{array}\right\}\text{Typical.}$$

$$\text{♀.}\ 1+2+3+4+5+6+7+8+0$$

123. HESPERIA COLACA, Moore.

Two males and four females.

124. HESPERIA SALA.

Hesperia sala, Hewitson, Trans. Entom. Soc. Lond., ser. 3, vol. ii, 1866, p. 500, from Singapore.

♀. Wings above vandyke-brown with a very faint vinaceous tinge.

Anterior wings with four semitransparent white lustrous spots all close together in the middle of the disk, two in the cell, the posterior of which is double the size of the anterior, which is the smallest of all, another immediately behind and in the same straight line with these, quadrate, the largest of all, being fully double the size of the posterior of the two cellular ones, and the fourth placed quincuncially between the second and third and rather smaller than the former of these.

Posterior wings immaculate.

Wings below paler, darkest around the spots in the anterior ones, all also suffused with vinaceous.

Anterior ones with the sutural area ashy and a large patch in the internomedian area whiter and showing through on the upperside as a somewhat diffused whitish speck.

Posterior wings clothed with ashy scales and bearing a cellular roundish spot darker than the ground-colour, around which spot are semicircularly arranged three or four similar ones, as in *H. divodasa.*

Cilia dusky-ashy.

Length of anterior wing ·56; whence expanse = 1·23 inches.

Closely allied to *H. divodasa*, Moore.

The "three minute brown spots before the apex" of the anterior wings mentioned by Hewitson are not discernible in our two specimens; they correspond to the dark brown marks which bound the apical dots on both sides in some specimens of *H. divodasa*, and, consequently, represent the apical semitransparent dots of that species.

125. HESPERIA NAROOA.

H. narooa, Moore, Proc. Zool. Soc. Lond. 1878, p. 687, pl. 45, fig. 4, ♂ ♀, from Bombay and Ceylon.

A male agreeing exactly with Moore's figure, but not quite so perfectly with his description, five discal spots being described but only four figured.

Obs. This species is said by Mr. Moore to differ only in its larger size from the *H. contigua* of Mabille, a species which we have failed to trace in the literature.

126. HESPERIA ACROLEUCA, n. sp.

Telegonus acroleucus, Proc. As. Soc. Bengal, August, 1881, p. 143.

Hesperia hiraca, Moore, Trans. Ent. Soc. Lond. September 1881, p. 313, ♀.

♂. Wings above dark brown slightly suffused with vinous.

Anterior wings tipped with ashy-white and with three large semitransparent pale yellow quadrangular lustrous spots arranged as in *T. thrax*, namely, one in the cell with its outer margin bifestooned and its inner biscalloped, another larger and elongated below and partly under this between the first and second median veinlets, and a third, the smallest of the three, rhomboidal, between the second and third median veinlets, and with the cilia dusky at the apex, but gradually becoming pale yellow towards the inner angle.

Posterior wings darker towards the outer margin with all the cilia pale yellow.

Wings below paler and duller, suffused with purple on the disk, and ornamented, especially on the medial area of the posterior pair, with scattered ochreous setiform scales.

Antennæ black with the straight portion of the club broadly and conspicuously incompletely ringed with cretaceous white and the much shorter terminal hooked portion red internally.

♀. Differs from the male only in its larger size; and in not having the anterior wings tipped with ashy, nor the antennæ nearly so conspicuously ringed with white.

♂ ♀. Eyes blood-red.

Palpi with the terminal joint rudimentary.

Length of anterior wing ♂ 1·05, ♀ 1·09; whence expanse = ♂ 2·26, ♀ 2·32 inches.

127. TELEGONUS THYRSIS, Fabr.

The male of this species presents, on the upperside of each anterior wing, three lines of modified scales, namely, one along the posterior side of the median vein between the origins of its first and second branches, another on each side of the first median veinlet from the origin of this up to the second discal spot, and a third, also double, along an equal portion of the submedian vein, and a thick clothing of setæ paler than the ground-colour at the base of the internomedian area and a similar clothing of paler setæ on the middle three-fourths of the sutural area; and, on the underside, a conspicuous and equally long furry patch of pale-fulvous coarse setæ divided by the submedian vein.

Five males and a female.

128. HALPE BETURIA, Hewitson.

129. PAMPHILA MATHIAS.

Hesperia mathias (Fabr.), Butler, Cat. Fabr. Lep. Brit. Mus. 1869, p. 275, pl. 3, fig. 8, ♂.

The specimens referred to *H. chaya* in our previous list are now placed under this species.

130. PAMPHILA PURREEA.

P. purreea, Moore, Proc. Zool. Soc. Lond. 1877, p. 594, pl. lviii, fig. 10.

♀. Larger than the male, with the yellow discal band throughout in the posterior wings, but only in the internomedian area in the anterior ones, and the yellow portions of the cilia, especially towards the inner and anal angles, darker, inclining to orange.

Length of anterior wing ·55; whence expanse = 1·18 inches.

A male and a female.

131. PAMPHILA GOLA, Moore.

132. PAMPHILA MÆSOIDES, Butler.

133. PAMPHILA AUGIAS, Linn.

Two males.

EXPLANATION OF PLATE XIV.

Fig. 1. *Papilio clytia*, var. *flavolimbatus*, Oberthür. ♂. Upperside.
" 2. ———— ———— ———— ♂. Underside.
" 3. *Hebomoia roepstorffii*, W.-M., ♂. Upperside.
" 4. ———— ———— ———— ♂. Underside.
" 5. ———— ———— ———— ♀. Upperside.

XVII.—*Description of a new Species of* Rostellaria, *from the Bay of Bengal.*—*By* GEOFFREY NEVILL, C. M. Z. S.

[Received November 3rd;—Read December 7th, 1881.]

ROSTELLARIA DELICATULA, n. sp.

Distinguished at once from all the other living species of the genus by its thin, delicate, and translucent substance, in these respects showing a highly important approach to some fossil forms. Colour a pale ochraceous brown lineated on the last whorl with four narrow white bands, each of which terminates in one of the four projecting digitate processes of the outer lip, one only of these bands appearing in the middle of the preceding four whorls; spire not quite half the entire length, apex moderately acute; whorls 10½, moderately convex, the last conspicuously convexly tumid and like the preceding one, marked with a slight sutural depression, produced at the base into a short canaliculation, relatively less developed than in any of the other known species, this "canal" is slightly tortuously deflected, more conspicuously so than in *R. magnus* (Chemnitz); the first three or four whorls are sculptureless, the next three or four inconspicuously but regularly spirally striated, striae about ten in number, filiform and slightly punctured, becoming obsolete on the last two whorls, except at the base of the last of all, where they reappear more coarsely developed than before; there are also five varices, somewhat inconspicuous, at intervals on the last four whorls, which also show, under a lens, minute longitudinal striation, the striae close set, fine, and flexuous; aperture oval, rather large, with the peristome thickened and denticulated with four equidistant, relatively somewhat small, digitate processes.

Long. 76, diam. 28; from the apex to suture of the last whorl 29½, from base of the aperture to end of the "canal" 6½ mill.

This highly interesting and very characteristic form, quite unlike any of the other seven known living species of the genus [as restricted] was dredged in deep water off Cheduba, Arrakan Coast, by Surgeon J. Armstrong, late Naturalist to the Indian Marine Survey.

XVIII.—*A numerical Estimate of the Species of Animals chiefly Land and Freshwater hitherto recorded from British India and its Dependencies.*—*By* William T. Blanford, F. R. S.

[Received November 10th;—Read December 7th, 1881.]

A few months ago I endeavoured to obtain an estimate of the number of species belonging to the animal kingdom that are found in British India and its Dependencies. I learned, somewhat to my surprise, that not only did no such census of the nominal species exist, but that, with the exception of the Vertebrata, the classes and orders had but rarely been catalogued in such a manner as to render an estimate of the number of species found in different countries practicable. I learned, moreover that, owing doubtless to the difficulty of ascertaining the number of species described, it was impossible to obtain a general enumeration of the fauna of any large area of the earth's surface.

The marine fauna inhabiting the seas around India is necessarily of vast extent and very imperfectly known. Confining myself, in the sub-kingdoms except the Vertebrata, to the land and freshwater fauna alone, I found anything like a correct estimate of the known species, except amongst the Vertebrata and the Mollusca, very difficult to procure. With the assistance of some friends, to whom I am greatly indebted for their aid, I have, however, obtained a rough idea of the number of species hitherto recorded in several orders, and this estimate leads to some very curious results, so much so that I think it may be useful to publish the data I have obtained, imperfect as they are.

In the first place, I should state precisely what is the area that I understand as comprised in the title of British India and its Dependencies. Of course the whole Peninsula of India proper is included, together with Ceylon. On the westward, Baluchistan is classed as a dependency, but not Afghanistan, so that the western frontier extends to Persia. Kashmir carries the boundary northward beyond the Karakoram pass to the confines of Eastern Turkestan, but this is the only Trans-Himalayan region comprised in the limits adopted; further east the small Himalayan states between Kashmir and Kamaon, with Kamaon itself, Nepal, Sikkim, and Bhutan, are all included as Dependencies, although in the case of Nepal and Bhutan the position politically is open to some question. But the fauna of these countries has always been included in that of India, and but few forms are known from them that do not occur in Sikkim or some other truly dependent state. All Great Tibet is excluded and so are the Himalayan tracts east of Bhutan. Assam with the hills to the south of the valley, Manipur, Cachar, Sylhet, Tipperah, Chutiaganj, and British Burmah

(Arakan, Pegu, Tenasserim) are comprised within our limits, but not Independent Burmah. On the mainland the frontier chosen does not run south beyond the end of Tenasserim, the Straits Settlements being excluded; but the fauna of the Andaman and Nicobar Islands is added to that of British Burma, of which they form dependencies.

It would be easy to find reasons for modifying various portions of the boundaries chosen, but they are believed to coincide as nearly as possible with the "red line" that marks the limit of British power. The most questionable addition of the whole is perhaps Ceylon, for this island, though entirely British, is in no sense a dependency of British India. But Ceylon is included for zoological reasons: its fauna differs very little indeed from that of Southern India, and the most important and typically Indian portion of the fauna would be imperfect were the animals of the island omitted.

The area thus circumscribed includes portions of two great zoological regions, the Oriental and the Palæarctic. To the latter belong northern Kashmir and part of Baluchistan together with all the Himalayas above an elevation varying from about 7000 to about 10,000 feet in different parts of the range; the former comprises the remainder of the area. The comparatively small tract of the Palæarctic region includes parts of at least two separable subregions of the higher Himalayas and portions of the Central Asiatic plateau, whilst in the Oriental part of the area the whole of two of Mr. Wallace's subregions* and portions of the other two are included.

The following are the numbers of species known, so far as I have been able to determine them. I repeat that whilst the number of Vertebrate species is, I believe, a fair approximation to the real number inhabiting the country, the Invertebrates are, as a rule, much less accurately known, and that whilst in the Vertebrata both land and marine forms are included, amongst the Invertebrata, the land and freshwater species alone are enumerated.

The data for the Mammals are various. I have collated the various works by Jerdon, Blyth, Dobson, Anderson, and others, and as nearly as I can estimate the following species are known:—

QUADRUMANA,	23
LEMURES,	3
CHIROPTERA,	80
INSECTIVORA,	55
CARNIVORA,	75

---

* It must be understood that Mr. Wallace's subdivisions are open to a considerable revision, and, as I shewed some years since, the boundaries of his Indian and Ceylonese subregions at all events are not correct.

CETACEA,	23
RODENTIA,	95
UNGULATA,	47
SIRENIA,	1
EDENTATA,	3
	405

For Birds, I take Mr. Hume's lists* in 'Stray Feathers,' Vol. VIII, pp. 81—116. It is scarcely necessary to say that the birds of India are better known than any other class. For the convenience of Indian ornithologists too, to whom the new classification is, as yet, not sufficiently familiar, I adopt the old as employed by Jerdon, although I must apologize for having recourse to an artificial and unscientific arrangement. I give the numbers of some of the more important orders and families. As Mr. Hume has shewn, about 70 species here included are doubtful.

RAPTORES :		
Accipitres,	97	
Striges,	52	
		149
INSESSORES :		
Psittaci,	18	
Picariæ,	212	
Passeres,	952	
		1182
COLUMBI,		46
RASORES :		
Pteroclidæ,	8	
Grallæ,	64	
		72
		1449
GRALLATORES :		
Otididæ,	6	
Limicolæ,	67	
Gruidæ,	4	
Rallidæ,	22	
Ciconidæ,	6	

---

* Mr. Hume's limits differ from mine by excluding Baluchistan and the Mergui Archipelago, which I include. There are not, however, I believe, half a dozen birds known from the two together that are not found within Indian limits elsewhere.

	Ardeidæ,	23	
	Tantalidæ,	1	
	Plataleidæ,	1	
	Ibididæ,	5	
			135
NATATORES :			
	Phœnicopteridæ,	2	
	Anseres,	36	
	Podicipidæ,	3	
	Procellaridæ,	6	
	Laridæ,	34	
	Phaëtonidæ,	3	
	Sulidæ,	3	
	Attagenidæ,	2	
	Pelacanidæ,	4	
	Graculidæ,	4	
			97
			1681

The data for the Reptiles are again various. Gunther's and Theobald's works form the basis for the enumeration.

CHELONIA,			54
CROCODILIA,			4
LACERTILIA :			
	Varanidæ,	5	
	Lacertidæ,	14	
	Zonuridæ,	1	
	Scincidæ,	48	
	Geckotidæ,	59	
	Agamidæ,	54	
	Chamæleontidæ,	1	
			182
OPHIDIA :			
	Typhlopidæ,	10	
	Tortricidæ,	2	
	Xenopeltidæ,	1	
	Uropeltidæ,	41	
	Calamaridæ,	11	
	Oligodontidæ,	27	
	Colubridæ,	57	
	Homalopsidæ,	10	

OPHIDIA:

Acontiophidæ,	1	
Psammophidæ,	3	
Dendrophidæ,	5	
Dryiophidæ,	8	
Dipsadidæ,	12	
Lycodontidæ,	10	
Amblycephalidæ,	5	
Pythonidæ,	2	
Erycidæ,	2	
Acrochordidæ,	1	
Elapidæ,	15	
Hydridæ,	30	
Crotalidæ,	17	
Viperidæ,	4	
		274
		514

The number of Amphibia is less easily determined as the species of BATRACHIA require careful revision. The number known is about 100, of which 1 only belongs to the URODELA and 5 to the PSEUDOPHIDIA.

The numbers of the Fishes are taken from Dr. Day's work, and are consequently trustworthy.

Acanthopterygii,	705
Acanthini,	43
Physostomi,	485
Lophobranchii,	15
Plectognathi,	44
Chondropterygii,	65
	1357

My principal authority for the Mollusca (land and freshwater) is Mr. Theobald's list printed as a supplement to the Conchologia Indica. I have omitted the estuarine species therein enumerated. Unfortunately I have not the numbers of the different families, and, as I am writing away from books, I can only give the approximate numbers of the classes here. They are—

GASTEROPODA (land and freshwater),	900
LAMELLIBRANCHIATA (all freshwater),	100
	1000

The next subkingdom Arthropoda includes the most formidable numerically of all orders, those of insects. Of some of these fairly approximate estimates may be formed, the principal difficulty in groups like Coleoptera and Lepidoptera being the labour of enumeration, but of many orders very little is known.

The numbers of the COLEOPTERA are taken from Gemminger and Harold's Catalogue, with additions up to 1878 from the Zoological Record. The following is the result :

Cicindelidæ,	112
Carabidæ,	617
Dytiscidæ,	44
Gyrinidæ,	13
Hydrophilidæ,	30
Paussidæ,	33
Staphylinidæ,	476
Pselaphidæ,	76
Scydmænidæ,	40
Silphidæ,	11
Trichopterygidæ,	12
Scaphidiidæ,	7
Histeridæ,	79
Phalacridæ,	18
Nitidulidæ,	63
Trogositidæ,	9
Colydiidæ,	19
Rhysodidæ,	3
Cucujidæ,	27
Cryptophagidæ,	9
Lathridiidæ,	19
Mycetophagidæ,	3
Dermestidæ,	8
Byrrhidae,	12
Parnidae,	5
Heteroceridae,	6
Lucanidae,	96
Scarabæidae,	558
Buprestidae,	107
Throscidae,	4
Eucnemidae,	19
Elateridae,	285
Rhipidoceridae,	7
Dascillidae,	17
Telephoridae,	96

Cleridae,	48
Lymexylidae,	2
Ptinidae,	4
Bostrychidae,	2
Cioidae,	6
Trictenotomidae,	2
Tenebrionidae,	148
Melandryidae,	2
Lagriidae,	5
Pedilidae,	12
Anthicidae,	65
Mordellidae,	5
Rhipidophoridae,	6
Cantharidae,	37
Œdemeridae,	2
Curculionidae,	248
Scolytidae,	59
Brenthidae,	18
Anthribidae,	35
Bruchidae,	28
Cerambycidae,	341
Chrysomelidae,	526
Languridae,	18
Erotylidae,	39
Endomychidae,	29
Coccinellidae,	145
Corylophidae,	8
	4780

Of the HYMENOPTERA I find 393 in the British Museum Catalogues, in which, however, some of the largest families such as *Ichneumonidae* are wanting. In the Zoological Record 277 additional species are noticed. Probably about 150 to 200 other forms are known and the number of described species may be estimated at 850.

I am indebted to Mr. F. Moore, who has probably a more extensive knowledge of Indian Lepidoptera, and especially of the moths, than any other naturalist, for an estimate of the number of described species of HETEROCERA. The following is the result:

Sphinges,	225
Bombyces,	1150
Noctues,	1150

Pyrales,	330
Geometres,	600
Crambices,	130
Tortrices and *Tineines,*	160
	3745

The RHOPALOCERA, or butterflies, have been enumerated for me by Mr. W. L. Distant, to whom I am indebted for assistance in several matters connected with this enquiry. He considers the number of species known to be about 875. The whole number of LEPIDOPTERA is consequently 4,620.

I am also indebted to Mr. Distant for having taken the trouble of approximately estimating the known RHYNCHOTA. He finds the number to be about

HEMIPTERA HETEROPTERA,	450
HEMIPTERA HOMOPTERA,	200
	650

Mr. R. McLachlan, to whom I applied for assistance in the order of NEUROPTERA of which he has made a special study, considers that 350 is a fair estimate.

I have been unable to obtain any trustworthy enumeration of the DIPTERA and ORTHOPTERA.

Amongst the other classes of the Arthropoda the only trustworthy information I have been able to procure is from Mr. Cambridge who informs me that although a large number of Indian Spiders have been collected very few have been determined or described. He knows of only 108 species distributed amongst the following families:

Theraphosidae,	3
Tetrablemmidae,	1
Drassidae,	12
Palpimanidae,	1
Agelenidae,	2
Hersiliidae,	2
Scytodidae,	2
Pholcidae,	4
Theridiidae,	10
Phoroncididae,	5
Epeiridae,	16
Gasteracanthidae,	11

Uloboridae,	1
Magrammopidae,	2
Polbidae,	1
Stephanopidae,	1
Thomisidae,	12
Lycosidae,	5
Oxyopidae,	5
Salticidae,	12
	108

To these may be added about a dozen scorpions making 120 ARACHNIDA.

The MYRIOPODA may be estimated roughly at 50.

The CRUSTACEA land and freshwater can scarcely exceed 100.

Of Vermes I can only find some 14 described species, 7 Planarians, 5 earthworms, and 2 leeches. I am indebted to Professor Jeffrey Bell for these numbers.

The following is a summary of the enumeration given above.

	Number of species.	
VERTEBRATA.		
Mammals,	405	
Birds,	1681	
Reptiles,	514	
Amphibia,	100	
Fishes,	1357	
	4058	
MOLLUSCA (LAND AND FRESHWATER ONLY).		
Gasteropoda,	900	
Lamellibranchiata,	100	
	1000	
ARTHROPODA.		
INSECTA.		
Coleoptera,	4780	
Hymenoptera,	850	
Lepidoptera,	4620	
Diptera,	500 ?	
Rhynchota,	650	
Neuroptera,	350	
Orthoptera,	350 ?	
		12,100

Myriopoda,	50 ?	
Arachnida,	120	
Crustacea,	100 ?	
		270
		12,370

VERMES.

Only about 14 species appear to be recorded.

I repeat that the numbers given for the *Arthropoda* are in some cases little more than guesses. I have not had time to go through some lists, an examination of which would have enabled me to give more accurate estimates. But except in the case of the four numbers to which a note of interrogation is appended the figures given are I believe a fair approximation to the truth, and the result is one that I think should make Anglo-Indian naturalists endeavour to improve our knowledge of the fauna. It is scarcely creditable that in a perfectly accessible country, with facilities for travelling and for living in different parts of the area unrivalled within the tropics, we should remain so ignorant of the zoology. It is ridiculous to suppose that the Indian *Coleoptera* are scarcely more numerous than the *Lepidoptera*, that the *Hymenoptera* (which very probably rival and may excel, each of the other orders) are only between $\frac{1}{5}$ and $\frac{1}{6}$ as numerous, or that the *Neuroptera*, of which, Mr. McLachlan tells me, about 1000 are known from Europe are only represented by 350 species. As to the spiders, it is no exaggeration to say that in most parts of India 108 species might be collected in a few days' search. It is to be hoped that the next five years will witness a very considerable increase in our knowledge of the fauna of India.

XIX.—*Description of a new Species of the Lepidopterous Genus* Euripus *from North-Eastern India.—By* J. Wood-Mason, *Deputy Superintendent, Indian Museum, Calcutta.*

Euripus cinnamomeus, n. sp., Pl. IV, Fig. 4.

♀. Anterior wings above purplish black-brown darkest at the base and along the edges and glossed with steel-blue on the disk, with a conspicuous suboval or subtriangular patch of changeable lilac-blue divided by the dark veins, commencing broadly just in front of the ultimate subcostal fork and rapidly narrowing to the inner angle, and with an indistinct submarginal series of small roundish white spots placed upon the inner edge of the narrow black-brown outer border and extending from the inner angle up to the third median veinlet.

Posterior wings above black-brown of a richer tint, broadly and interdigitatingly bordered externally with clear cinnamon-brown, which is traversed by the dark brown veins and bears, midway between the black base and the wavy purplish-black narrow outer border of the organs, a series of four impressed white specks all encircled internally with black-brown, one in each interspace from the first median to the second subcostal veinlet, and, at its junction with the wavy black outer border, a similar but more complete series of white specks, two to each interspace (except the second, in which there are four, the middle one of the three being divided) from the internal vein to the first subcostal veinlet, and all roundish, except the first two, which present the form of linear marks parallel to the outer margin.

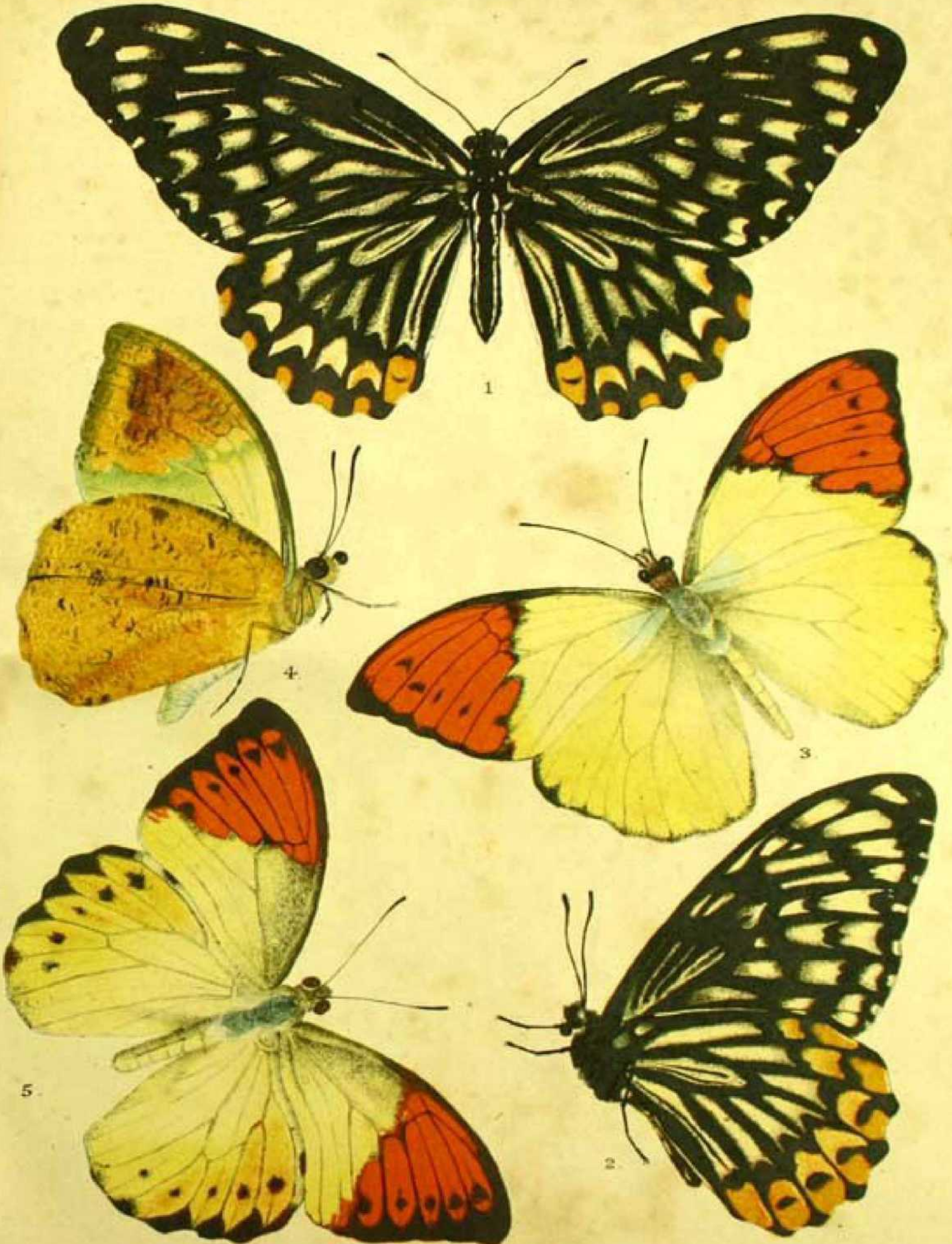
Wings below cinnamon-brown all narrowly bordered externally with purplish black-brown, with the veins rich dark brown and the submarginal spots more numerous and distinct than above.

Anterior pair slightly darker for their basal two-thirds, with a short streak of pale lilac between the first and second median veinlets near the base of the cell and an ill-defined roundish clump of scales of the same colour beyond it, an externally forked streak of dark violet-blue occupying the basal two-thirds of the internomedian area and followed by a indistinct clump of violet-grey scales, a grey streak in the apical half of the sutural area, and a submarginal series of violet-white spots situated upon the inner edge of the black outer border, and extending from the sutural area to the apical angle, with all the spots round except the first six (which have the form of linear streaks) and the last (which is elongate), and arranged two in each interspace except the eighth from the apex (in which there are three) and the last, in which there is only one.

Posterior pair uniformly coloured, with a discal series of seven violet-white spots and dots, arranged in two series, an anterior curved one of three, and a posterior straight one of four, the three foremost of which latter, with the last of the anterior series, coincide with the four impressed spots of the upperside; and with a submarginal series of spots of the same colour, situation, and extent as in the anterior wings, but differing somewhat in shape, the last three being linear streaks parallel to the outer margin and the rest more or less elongate and those of each pair divergent externally as if they were the remaining outer ends or horns of lost lunules.

Length of anterior wing 1·6 ; whence expanse = 3·34 inches.

HAB. Shillong, Khasi Hills, N. E. India. A single specimen of this beautiful and distinct species has been communicated to by Mr. L. De Nicéville. It was captured in November last by the late Mr. J. P. Cock.



Behari Lal Das del.

West, Newman & Co chr. lith.

Figs. 1, 2. PAPILIO CLYTIA var. FLAVOLIMBATUS ♂